AVIATION

The Oldest American Aeronautical Magazine

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Los Angeles-Salt Lake City Mail Plane over Black Canyon, 100 Miles from Los Vegas, Calif.

(Courtesy International Newsreel)

VOLUME XX

NUMBER 19

SPECIAL FEATURES

CURTISS SERVICE SPEED COOLIDGE NEWS PHOTOS

THE NATIONAL BALLOON RACE

LOS ANGELES-SALT LAKE CITY AIR MAIL OPENED

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AVIATION

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VOL XX MAY 10, 1926 NO 19

Civilian Flying

ONE OF the most interesting facts brought out in the survey of commercial flying conducted by AVIATION is the small amount of flying done compared with the number of planes reporting. The average works out at no more than half an hour's flying per day per plane and, as many of those reporting undoubtedly exaggerated the amount of flying which they did, it is probably rather less. There are many conclusions which can be drawn from this small use of the planes. In the first place, it is obvious that most of the owners could not make money out of the planes unless they were very cheap originally, rendering it possible to discount almost entirely all interest or depreciation charges. Half an hour's flying per day will not pay the interest and depreciation charges on an expensive plane at normal commercial flying rates.

Again, it is obvious that most of the planes were not being worn out from flying but rather from obsolescence and deterioration due to weathering. A plane, to be intensively used, should fly at least 1,000 hours, while a plane which undergoes the really extensive use and good maintenance which it would receive in regular airway service has a life of at least 2,000 hours and more. As the average civilian plane in this country flies less than 150 hours a year, it will be many years before it is worn out by flying. The importance of good protective covering to keep moisture from getting at the parts is, therefore, extremely important. The value of metal construction is also apparent.

If a plane is to remain in storage the greater part of the time it is obvious that storage rates must be kept as low as possible. In this matter the Government can help to a very large extent, either through Government fields or through keeping taxes low on privately owned fields. The cost of hangar accommodation is one of the items which largely affects the cost of maintaining the average plane. Folding wings and planes which can be stored without depreciation in an unheated hangar are elements of great importance.

The more expensive modern planes undoubtedly pay for themselves if used a very great deal and it probably would be found, where modern planes are being used, that actually they are flown on an average of many more hours per year than are the war surplus airplanes. There seems to be a steady increase in the number of fixed base operators who devote their whole time to aviation. In that case they can probably make more money out of the more expensive but efficient modern plane than out of obsolete war stock. The majority of fliers, however, obviously still have some other business or source of income.

The figures of mileage statistics are, however, extremely interesting and their interest will increase when they can be compared, early in 1927, with similar figures relating to the present year's mileage of commercial fliers.

The New Engines

UNDOUBTEDLY ONE of the greatest problems of commercial aeronautics today is the engine question. The old war surplus stocks are beginning to run low and in many cases, especially in the case of the Liberty, the engines have seriously depreciated as a result of just standing around. Even if the stock was unlimited, commercial efficiency demands the development of new types. This development will take several years and so the problem of the general lines of engine developed is really one of today since, in a couple of years, when the surplus engine is perforce discarded, it will be too late to start finding out what the flier needs and wants.

In other classes of gasoline propelled vehicles there are really two types of engines. One, the heavy duty type of engine, which is capable of developing nearly full throttle power for long periods of time, and the other, an engine which will develop a great burst of power but which is not normally expected to be used at full throttle for long periods of time. Most motor boats have heavy duty engines, while most automobiles and motorcycles have reserve power engines which are very reliable at half power but which will break down if run at maximum throttle for long periods of time. Very few stock cars could get through a twenty-four hour race at maximum speed but all of them will run continuously at a normal speed.

The airplane is, in most respects, like the motor boat in as far as it is run practically at full throttle so long as the power plant holds out. The Curtiss OX engines are very nearly heavy duty engines. By changing compression, valve action and ignition, almost any good engineer could make these engines develop a lot more power but their power output has been deliberately kept low and they can be run at practically full throttle for long periods of time, with the result that this engine is one of the most popular of aviation engines.

Actually, in one of its essential features, the airplane power plant problem is unlike that of the motor boat for the airplane needs a vast reserve of power with which to take off and climb. Engines can be built to have a great reserve of power for short periods and great endurance at partial throttle for long periods. The real difficulty lies in the pilot. There are few men who can restrain themselves and fly at half throttle even in a plane which has ample reserve power at this speed. There is a constant tendency to speed the engine up to a point where the strains on the metal will ultimately cause crystalization and breakage, whereas, if the engine had been kept throttled, there would have been no over strain on the metal and no tendency to crystalize.

The choice is really up to the pilots. Do they want an engine with great reserve power but which must normally be throttled or must they have a heavy duty engine which can be run wide open most of the time?

Curtiss Service Speeds Coolidge News Photos

How Airplanes Enabled Newspapers to Receive Photographs on the Death of Colonel Coolidge in Record Time from Vermont.

THE CURTISS FLYING SERVICE, Inc, of Garden City, N. Y., recently carried out a unique cross-country flight which demonstrated clearly the reliability of commercial flying, even under the most adverse conditions. At the time of the death of President Coolidge's father, New York newspapers chartered three planes to fly to Vermont and bring back pictures taken at the Coolidge homestead.

A survey of the situation showed that flying conditions would be unusual, to say the least. The Coolidge home is deep in the Green Mountains of Vermont and, at the time, there was five feet of snow on the ground in that vicinity. Mountains made landing fields out of the question, but a large lake was found to be located about four miles from the Coolidge home. This lake was frozen and covered with three feet of snow which made landing with wheels impossible. There was no snow whatever on Curtiss Field, which prevented taking off with skis. Time was at a premium, and it was necessary, therefore, to devise a plan which would insure the successful completion of the flight, in spite of the difficult landing conditions.

To Use Wheels and Skis

The plan was to take off from Curtiss Field with skis lashed to the wings of the planes, land at Albany where the snow was just the proper depth to allow operating with either wheels or skis, change from wheels to skis and land on the lake in Vermont on skis. The return trip included a stop at Albany to change again back to wheels and proceed on to New York. Two Curtiss Orioles and one DH with Curtiss D-12 engine, were assigned to the job.

On the morning of March 18, the call for the first plane to leave was received from the news office and, in fifteen minutes, Pilot Andrews and Mechanic De Cecca were on their way in an Oriole. Half an hour later, Pilot Caperton and Mechanic Steinhuer took off in the DH, preceding Pilot Enderton and Mechanic Herman by about an hour and a half, all with their skis strapped to the wings of their airplanes, prepared either for snow or dry ground.

The Standard Oil Company had been requested to have gasoline and oil on the field at Albany and were most helpful, not only in cooperating with fuel supplies, but by furnishing additional men to assist with the changing of the running gear. This Company treated the crews most cordially, bringing sandwiches and coffee to the field and helping in many ways.

All three machines took off from Albany for Echo Lake, Vt., within a half hour after landing at Albany and landed one hour later on the lake in the valley, four miles from Colonel Coolidge's home. The lake was covered with soft, fluffy snow and it was necessary to taxi up and down its entire length several times to pack this snow down in order to be able to get off quickly on the following morning. The roads in that section were impassable for anything but sleds and the going was very slow, which made the need for haste in getting away, after receiving the films from the photographers, of paramount importance. Hot water was needed in large quantities as the temperature was some twelve degrees below zero. The nearest farmhouse was three miles away and, with inadequate heating facilities, the crews of the planes were forced to spend most of the night heating water for the early morning start back to New York via Albany.

Railroad trains could not have carried these pictures to New York before 10 30 p.m., as there are only two trains a day from Ludlow, the nearest railroad station. It was imperative that these films and plates be in the newspaper offices in time for the afternoon editions, as the following morning's papers would feature the pictures which would be brought to New York by train.

Served Afternoon Papers

President Coolidge was scheduled to arrive at his father's home at about 8:00 a.m. and the pictures featuring this phase of the story were expected at the lake about an hour later. Due to the slow going over the snow covered roads, the photographers did not arrive at the airplanes until 11 00 a.m. and all three machines were away immediately after the plates and films were received by the pilots. Landing at Albany an hour later, two machines changed again to wheels and proceeded to New York, while Pilot Andrews delivered his films to a fourth machine, an Oriole piloted by Lieutenant King, which had been sent from New York to meet him. Andrews was instructed to return immediately to Echo Lake to remain until after the funeral of Colonel Coolidge for the purpose of bringing the pictures of the last rites to New York. The other two planes landed at Curtiss Field in time to deliver their films for the afternoon editions of the papers.

Planes of Curtiss Flying Service at Echo Lake, Vt.

After gassing up, these planes returned to Albany to spend the night and go on to Echo Lake in the morning to get the funeral pictures. Wheels were changed to skis once more and the night was spent in well-earned rest in Albany. Again the Standard Oil Company was on the job, providing fuel and assisting the crews in changing landing gears.

A Curtiss Oriole and some of the Curtiss Flying Service crew at Echo Lake, Vt. Note the wheels strapped to the interplane struts.

The following day broke with rain and dense fog. The funeral was to be held at 2:00 p.m. and the pictures were expected at Echo Lake at about 3:00 p.m. Weather reports indicated heavy snow falling in Vermont and the visibility was practically nil at that time. However, at about one o'clock the fog lifted sufficiently to enable Pilots McMullen and Caperton to proceed cautiously up the Rutland Railroad and to Echo Lake via Rutland, Vt. This route requires at least half an hour longer, but affords a valley all the way and was followed as it was impossible to fly over the tops of the mountains as had been done the previous day. After more than an hour and a half of winding through mountain passes in very thick snowfall over strange territory, these two planes landed at Echo Lake just in time to meet the photographers as they hurried with their magazines of plates and reels of film. Flying back down the valley at less than 100 ft. above the railroad tracks, the planes landed at Albany and changed once more to wheels. The trip down the Hudson was without event and was a relief after the ninety minutes of dodging mountain-sides all the way into Albany from Echo Lake. The newspapers again received their pictures in time for their evening editions and all but one of the planes arrived in New York on time.

Won Against Odds

This machine left Echo Lake thirty minutes after the other two had taken off, due to the fact that its pictures were half an hour late getting to the Lake. Hoping to make up some of this lost time, the pilot attempted to fly over the tops of the mountains through the snow and thick weather. Becoming locked in a valley and unable to see far enough ahead to distinguish the mountains, he landed. After waiting about 45 min. the weather cleared enough to enable the pilot to get into Albany just after dark. The pictures were delivered to a representative of the newspaper who caught a fast train out of Albany. They were developed and printed in a Pullman drawing room, saving one hour and enabling the pictures to arrive only two hours after the other two planes had delivered their films in New York.

Considering the disadvantages of the terrain, the difficulty in having to twice change the type of landing gear, the extremely low temperature and the bad weather encountered on the second day's flying, the Curtiss Flying Service is very proud of this performance and feels that it compares favorably with the remarkable records made by the pilots of the U.S. Air Mail Service.

Germany's Commercial Aviation Subsidies

Germany's subsidies for the development of commercial aviation granted during 1925 have been estimated roughly at approximately 30,000,000 marks ($7,140,000). The subsidies were reported in Germany to have included federal, state and municipal grants, both direct and indirect.

Federal grants are made by the Reichstag through the Air Department of the Ministry of Transport and Communications. In direct form, they appear mainly as a bonus for every kilometer flown, amounting, on an average, to about 2 marks (28 cents) per kilometer. Operating costs are about 2.90 marks (50 cents) per kilometer. As indirect grants from the Reich, aside from and in addition to the bonus mentioned above, there are contributions for radio direction, technical exhibitions, competition prizes, weather reports, insurance, scientific research, etc. Such grants are said in Berlin to be relatively small, amounting in all to not more than 1,000,000 marks ($238,000), yet they have increased considerably during 1925 in comparison with preceding years.

State grants as a rule are used for ground work, survey and patrol, new installations, etc. Municipal grants go mostly for landing fields and terminals.

Underwood & Underwood

Planes of the Lufthansa the German air transport combine, lined up on the Tempelhofer Feld, the Berlin airport. The four-engine Udet airliner can be seen in the foreground.

Los Angeles–Salt Lake City Air Mail Opened

Western Air Express Carrying Increasingly Large Air Mail Loads with Marked Regularity. Service is Proving of Great Value to Eastern States.

CONTRACT AIR mail service over the Los Angeles to Salt Lake City airway was inaugurated on April 17. Without the slightest hitch in program, planes of Western Air Express, Inc., departed from either terminus on time and completed their respective journeys well within schedule, carrying the heaviest consignments by aerial post ever sent to or from Southern California.

Postal authorities in attendance at the opening declared that the 378 lb. of mail carried eastward represented a record in net mail on a first flight. The westbound plane carried 200 lb. of mail out of Salt Lake City. Each plane added approximately 10 lb. to its cargo at Las Vegas, Nev.

Over the historic trail beaten across the American desert by more than a century of traffic, the big Douglas mail planes of Western Air Express winged their way to further commercial aviation in the West. Capt. Maurice Graham, veteran overseas aviator, piloted the plane departing from the new air mail airport established by the contract company just 6½ miles from the heart of Los Angeles. Lieut. Charles N. "Jimmy" James piloted the first westbound plane.

Historic Reminiscences

The route of this airway follows closely the beaten path established early in the international contest for possession of the western third of the continent. Eastward, through Cajon Pass and on across the southern edge of Death Valley, the desert barrens of eastern California, southern Nevada and western Utah, to the Valley of the Great Salt Lake, this highway holds a place of romance in the history of the West.

In 1776, Silvestre Velez de Escalante, a Franciscan Friar of Santa Fe, explored the eastern half of this route in attempting to find the natural passage from New Mexico into the missions of Southern California. His expedition failed and, for fifty years, this land of almost inaccessible remoteness remained a part of that "Northern Mystery" on which Spain spent so much of blood and wealth in futile efforts to fathom.

It remained for an Anglo-Saxon trapper, Jed Smith—partner of the redoubtable Jim Bridger—to find this trail when on a beaver hunting expedition early in 1826. Smith's party, arriving at the California colonies, aroused the suspicions and the ire of Mexican officials who saw in their achievement the possibility of a struggle for territory.

Immediately, connecting the Escalante's trail with that of Smith, the Mexicans established the western leg of the famous Old Santa Fe trail over which, for twenty years, poured adventurers of all nations hastening from the "States" to California. In 1843, Fremont, returning from his explorations, traveled this road and in his journal left a graphic account of its topography. Still later, the Mormons, bent on settlement of the whole great West, poured immigrants down this highway as far as San Bernardino where their California colony was located.

Through subsequent years, railroad and auto highway found this same route the shortest, most facile crossing of that desert barrier which reaches for more than 500 miles with only occasional watering places.

But, in some ways, the disadvantages of land travel contribute distinct advantages to aerial transportation. Riding high above the painted deserts and picturesque arroyas of this region, the flier can sight, almost continuously, good spots in which to set down his plane should emergency arise.

To make doubly sure of this, Western Air Express, Inc., sent its pilots out on an airway mapping expedition by auto truck, previously to the inauguration of the service. Eighty-five emergency fields were marked along the 669 mile course and an alternative route through the "Mormon Mountains"—the only bad stretch on the entire run—was laid out.

On the way to Salt Lake City. A Western Air Express Douglas mail plane (Liberty XII) on a trial run

For equipment, this company has a fleet of six Douglas planes, each with a cargo capacity of 1,000 lb. Four regular pilots and two reserve pilots are employed. One plane takes off from either terminal daily, flying through to the other end. The next day, these return to their home port and lay over two days while the other set complete the round trip.

Ground communication of the company consists of short wave radio outfits at Los Angeles, Las Vegas and Salt Lake City. At Los Angeles, the company has its own field with hangar and machine shops. At Salt Lake City, it has its hangar on the municipal landing field which is also used by the government air mail service and at Las Vegas it utilizes a municipal field.

The air operations of Western Air Express, Inc., are directed by Maj. C. C. Mosely, as vice-president and general superintendent. General management of the concern is vested in Harris M. Hanshue, veteran of the automotive industry, who left the automobile field to accept guidance of Western Air Express, as president.

In the financing, equipping and launching of this new enterprise, a life of business training was brought to bear on an undertaking so new in many aspects as to tax the talents of genius. The result was in evidence on opening day when, despite the crowds that gathered and civic celebrations staged at each of the three cities on the route, the planes of this company, heavily laden, were dispatched with a certainty and precision possible only under perfected organization. It has since been daily in evidence, planes of this company making their full flight without default and without mishap.

This service, bringing Southern California to within thirty hours of the Atlantic seaboard, promises to be one of the leading commercial airways of the country. Serving a population of approximately two million people in Southern California, its air mail potential is vastly higher than would at first appear. During the initial week of operation, this line carried an average of better than 130 lb. of mail each way, daily. And each day has seen a gradual but marked increase in the load. Efforts are being directed to building up the air mail as rapidly as possible. At the same time, officers of the company are planning extension of the service into the express and passenger fields.

One feature of the inaugural flight was the carriage of orchids from Southern California to eastern cities. These delicate blooms will not stand up under rail shipment over great distances and the advent of direct aerial transportation led Armacost & Royston, orchid growers of Los Angeles, to experiment with that method of reaching the eastern market. Corsages of orchids sent to Mrs. Coolidge, Mrs. New, Mayor Dever, Mayor Walker and dealers in various eastern cities arrived in excellent condition, according to advices received and plans are now being laid for regular consignments of these blooms by air.

The speed, too, with which this contract line quickens communication between eastern cities and Southern California, was exemplified in experiments conducted during the first few days of operation. As these advantages become more pronounced and more generally known, Western Air Express, Inc., anticipates a quickening of interest and considerable increases in air mail usage by those who should be using it because they can realize a profit from this service.

Flint Air Meet Notice

In the April 19 issue of AVIATION, there appeared an advertisement of the Flint Air Meet in which it was stated that the closing date for all entries in the events was May 1. We have since been informed, however, that this announcement should have indicated May 15 as the closing date for these entries.

The Flint Air Meet will take place on the dates, June 4, 5 and 6. There is to be an indoor exhibition of aircraft, etc. for which space will be furnished to exhibitors free of charge. All manufacturers of aircraft, engines, instruments, etc., are requested to send in their reservations before May 15.

The New Cyclops Bombing Plane

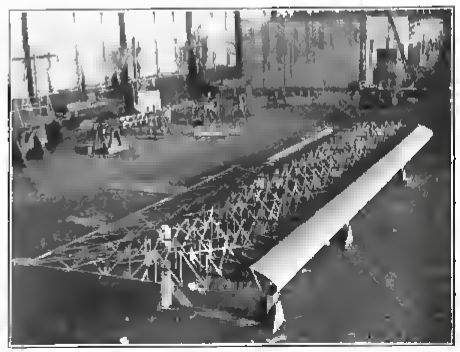
One of the most interesting developments in aeronautical construction is under way at the Huff Daland airplane plant in Bristol, Pa. This development consists of the production of the largest single-engine bombing plane ever built in the United States. It has been designed by C. T. Porter, chief engineer of Huff Daland Airplanes, Inc. It is a type which will be known as the Cyclops, and will be approximately 60% larger than the XLB, Pegasus light bomber which won the Detroit News Air Transport Trophy during the New York 1925 Air Races at Mitchel Field, last fall.

Thomas H. Huff, president of Huff Daland Airplanes, Inc., standing by the Cyclops propeller

Full details of the construction have been withheld but it is understood that the plane is to be powered with a Packard 1A-2500 800 hp. engine turning, on a geared shaft, a 16 ft. propeller.

The total weight of the Cyclops will be 17,000 lb. and it will have a useful load of 9,000 lb. It is estimated from wind tunnel tests and calculations that the machine will have a speed of approximately 130 m.p.h.

The fuselage is of welded seamless steel tube construction without bracing wires. The two main spars of the wings are made of seamless chrome molybdenum steel tube. Two long tubes, running the whole length of the wing, constitute the upper and lower "flanges" of the wing girder.



A Cyclops wing in the making

Short tubes of the same material, welded to the top and bottom beams, constitute the girder webs. The wing ribs are of tube duralumin. The plane will carry a crew of six men with six bombs over a radius of 1000 miles.

Chicago–Dallas Air Mail Service

National Air Transport, Inc. to Open Air Mail Service on May 12.

THE CHAMBERS OF COMMERCE from Chicago to San Antonio are getting ready to supervise the christening of the ten Carrier Pigeons with which the National Air Transport, Inc., will start its 1,000 mile mail and express service on May 12. The tentative plan is to name the planes "Chicago", "Moline-Rock Island-Davanport", "St. Joseph", "Kansas City", "Wichita", "Oklahoma City", "Fort Worth", "Dallas", "San Antonio" and "Houston". The last two named cities are beyond the southern terminal of the route, but are big business centers and are expected to make extensive use of the N.A.T. line, getting their mail to and from the planes by over-night trains.

In all the cities through which the route passes directly, many important business men and firms have signified their intention of aiding the line in achieving success by throwing at all the business they can. The Post Office Department has arranged to allow air mail to be posted in any letter boxes and in any sort of envelopes, if properly marked and supplied with the proper amount of postage. Ten cents for each ounce, or fraction thereof, will carry a letter between any two points on the route and allow it to be delivered to a railroad train along the way.

Continental and N.A.T. Lines Connect

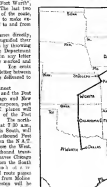
Through the close hitching up of the N.A.T. and the Post Office overnight air mail service between Chicago and New York, the new route will be, to all intents and purposes, part and parcel of the general service. The N.A.T. planes will leave Chicago at 5.45 a.m., upon the arrival of the Post Office overnight air mail plane from New York. The northbound N.A.T. planes, which will leave Dallas at 7.30 a.m., upon the arrival of the mail trains from points South, will reach Chicago in time to connect with the eastbound Post Office flier. There is a close connection between the N.A.T. and the in-coming trans-continental air mail from the West. Plans are being considered whereby the westbound trans-continental Post Office air mail plane, which leaves Chicago about 6 p.m., will pick up the N.A.T. mail from the South at Moline. This plan would not require much of a readjustment of the route, as the trans-continental route passes through Iowa City, about fifteen minutes' flight from Moline.

As things are, however, Boston and Galveston will be brought a full day nearer together by the opening of the N.A.T. route and, it is estimated, there are between 20,000,000 and 25,000,000 people in the 400 mile strip, which extends 2,400 miles from Galveston to Boston by way of Chicago, who will be essentially served by the new route. With completion of the arrangements regarding the western part of the trans-continental air mail route, several millions more people will be added to the possible beneficiaries. Improvements which will make the service even more complete are being planned. By fall, it is expected, a through express service from Dallas to New York will be in operation.

Delivery of Planes

N.A.T. pilots have been flying the Carrier Pigeons intended for the new mail and express service from the Buffalo factory of the Curtiss Aeroplane and Motor Co., Inc., to their destinations along the route. Their course has been from Buffalo to Cleveland, thence along the trans-continental Post Office air route to Chicago and then down the N.A.T. route to the headquarters of E. P. Lott, Manager of Operations, at Kansas City. There they have been inspected. So far, eight of the ten machines have been delivered and the last two are scheduled to leave the factory shortly. They will, in fact, probably have been delivered by the time this note is in print. The planes will be so distributed along the route as to make serious delays in traffic handling next to impossible. Two will be stationed at Chicago and two at Dallas, the extremes of the line, four at Kansas City, the center, and one each at Moline and Oklahoma City, quarter way South and quarter way North.

Ten pilots will man the planes and take turns in flying with the mail, though only four will actually be called upon per day, one starting each way in the mornings and turning over their cargoes to two others at Kansas City. Seven pilots, so far, have been selected. They are R. H. Fatt, Jr., L. H. Garrison, E. Matncha, D. A. Askew, H. L. Kindred, W. G. Neville and R. L. Dobie. There are seven field managers, the field at Fort Worth being in charge of a clerk merely



A general map of the N.A.T. route

because of the proximity of the Dallas field. The seven are: Chicago, E. Van Vechten; Moline-Rock Island-Davenport, E. K. Campbell; St. Joseph, the engine repair yard of the N.A.T., Ralph Wishon; Kansas City, headquarters of E. P. Lott, Manager of Operations for the N.A.T., R. E. Pfennig; Wichita, E. M. Emmerich; Oklahoma City, H. W. Parker; Dallas, P. D. Lampert.

To gain the attention of the business people in the larger Texas cities a "Good Will" flight of two N.A.T. planes is being considered. If it takes place it will do so under the auspices of John W. Philip, postmaster at Dallas. The calls at the cities would be attended by gatherings and addresses.

Postage Rates

Postal rates are: Ten cents an ounce or fraction from any point on National Air Transport Line (Dallas Ft. Worth-Chicago) to any other point on the same route, including rail connection from or to any point in the United States. Fifteen cents an ounce or fraction from any point on National Air Transport Line (Dallas-Ft. Worth-Chicago) to any point on U. S. Air Mail Route, Chicago to New York, including rail connection from or to air lines where necessary. Twenty-five cents an ounce or fraction from any point on National Air Transport Line (Dallas-Ft. Worth-Chicago) to Hartford or Boston, including rail connection from or to air lines where necessary. When in doubt as to postage rates, consult your Postmaster.

The schedule is as follows:

NORTH		SOUTH	
Lv Dallas	7 30 a. m.	Lv Chicago	5 45 a. m.
Lv Ft. Worth	8 00 a. m.	Lv Moline	7 55 a. m.
Lv Okla. City	10 10 a. m.	Lv St. Joseph	10 35 a. m.
Lv Wichita	11 57 a. m.	Lv Kansas City	11 18 a. m.
Lv Kansas City	1 57 p. m.	Lv Wichita	1 18 p. m.
Lv St. Joseph	2 40 p. m.	Lv Okla. City	3 05 p. m.
Lv Moline	5 40 p. m.	Lv Ft. Worth	5 10 p. m.
Ar Chicago	7 20 p. m.	Ar Dallas	5 30 p. m.

The following brief details, relating to an inspection tour of the N.A.T. air mail route, have been received and, by the time this appears in print, the tour will have almost reached its conclusion. The details, therefore, are published in their original form.—EDITOR.

Partly by airplane, officials of the National Air Transport, Inc., will begin an inspection tour of their 1,000-mile mail and express route on Friday, April 30. The trip will start with the inspection of Checkerboard Field, Maywood, Ill., and jump to Dallas, Tex., the southern terminal of the line, where the visitors will arrive on May 6, gradually working their way through the list of 8 flying fields. They are scheduled to be at Fort Worth, Tex., on May 8; Oklahoma City, Okla., and Wichita, Kans., on May 9; Moline, Ill., and Kansas City, Mo., May 11, and Kansas City and St. Joseph, Mo., on May 12. The trips between Oklahoma City and Wichita, between Moline and Kansas City, and between Kansas City and St. Joseph, at least, will be made by plane. Regular mail and express service on the route will be started on May 12, at the conclusion of the inspection trip.

The inspection party will be made up of Howard E. Coffin, president of the N.A.T. and vice-president of the Hudson Motor Car Company, Detroit; Col. Paul Henderson, general manager of N.A.T.; and C. Townsend Ludington, chairman of the Technical Committee of the N.A.T. Board of Directors, and president of the B.B.T. Corporation of America, Philadelphia.

Developing Airports

To the Editor, AVIATION:

There are hundreds of thousands of dollars being wasted in the establishment of what are called airports or landing fields and which can never be such for many reasons. For example, inadequate space in such locations as will ever make expansion prohibitive or impossible, no natural drainage and artificial drainage requiring exorbitant cost, locations often inaccessible to business or industrial districts and established means of transportation.

The deplorable part is that in many such cases there are really desirable sites overlooked. This condition is traceable to causes which I can claim to in considerable measure. If I may be so fortunate as to have your cooperation. I have been through the whole procedure of establishing airports and have made considerable study of the problems involved.

Briefly, here is what has happened in the past: a few people, out of patriotism or a true appreciation of aerial transportation have brought about the establishment of a few good flying fields.

Here is what is taking place today. With current developments reflecting a bright future for aerial transportation—nearly every community, for one or more of many good reasons, begins to consider ways and means of aiding the movement and incidentally of obtaining some of the benefits destined to accrue to those cities which are prepared to receive our most modern means of transportation. We (of the awakening community) hear of Podunk's airport. Who has not? Our civic pride has been sand papered a bit because they are ahead of us. Ah, an airport—that's the thing! "But where and how are we going to do it?" Occasionally a 'Local Aviator' lends a hand and gets good results. GENERALLY we look to one of three places for guidance, viz— Precedent, AVIATION and Washington.

Take the first instance—Precedent. Precedent is Podunk's airport. Nine out of ten of these are little more than possible emergency fields. Nevertheless, a Jenny has landed and taken off successfully, a DH has gotten away with it—there has been flying done there—it must be a landing field. Result is, following Podunk, we select any tract of land in any locality and set it aside for flying purposes. WE have an airport! We don't know it but we haven't as much as a landing field. Unfortunately this is not an exceptional case. There are thousands of dollars tied up in these mistakes in the name of "Aerial Promotion," "Aerial Progress" and what not.

A complete remedy for action taken out of hastiness, over enthusiasm and misinformation is not at hand. However, we can broadcast a warning of "Look before you leap" and thus take a bit of honest effort out of the paving class.

Now over in Potash we are equally enthused over flying, also primed with civic pride and we want air transportation. However, we are conservative, we look around a bit. We turn to AVIATION or Washington. AVIATION—because it has ever been cultivating sound air thought—it has been a leader in the dissemination of reliable aeronautical information. Washington—because everyone runs to Washington. It seems to be the thing. And because we have heard much of flying from Washington. In either case we arrive at the same place.

AVIATION very courteously refers us (as in the case of my inquiry) to Washington, and it should. Washington is reputed to contain all the desired information on the subject. A call will get much encouragement and fairly good results but correspondence is of no particular use. All in all we don't get much satisfaction. However, we find no particular department at fault—we can't blame anyone—it simply seems to be a complicated and short handed condition.

There are many reasons to believe that time will change the existing condition and the unaffiliated, who seek information and consultation on a matter so vitally important to future development, will undoubtedly receive guidance. But when? Not in the near future!

Every city in America will have at least a landing field or suffer isolation as far as modern transportation is concerned. They know it and are anxious to get on the band wagon. They get lots of encouragement but no real assistance. The Committee on Airports", armed with maps, drawing and all sorts of directions and specifications sets out to put Potash on the map. (Let this not be taken as belittling their efforts. It is the willingness of the American people that will eventually bring about a system of airways that will make all others small by comparison.) But watch the "Committee"—there are nine members from nine different walks of life—hence we have at least nine interpretations of the directions at hand.

You will probably agree that any man or group of men, with years of flying experience, will have to weigh everything entailed in the selection of a site for landing facilities and give each individual case considerable study before intelligent selection can be made. Even then some mistakes would be made—so what percentage of the inexperienced will hit the mark!

Every Potash in America needs the personal attention of someone experienced in these matters and I will gladly give any of them the benefit of my experience.

Certainly, I would indeed be presumptious if I were to set myself up as absolute authority on airports. I do not. However, I am armed with a fair measure of success in such matters and a desire to see the right thing done in the right way.

JAMES V. PIERSOL,
Kalamazoo, Mich.

Beginners in Aviation

TO THE EDITOR, AVIATION:

I have noted with interest the many discussions which have been appearing in AVIATION during the past weeks. I believe that these discussions have done an immense amount of good because they have started fliers thinking.

The student flier has been the target of the greater part of the discussion. I fear that many fliers with their thousands of hours today, forget that they too once were amateurs. However, it is obviously unfair for a student with from five to six hours instruction, to begin carrying passengers.

However, for financial reasons it might be well to place the necessary number of hours as low as possible. If the beginner flies only from good fields, and in good weather, I believe that he is probably as safe as the professionals, who often flies from small fields in very uncertain weather. *Caution is a very good substitute for experience.*

It always strikes me as being a good joke when I read the suggestion about the beginner carrying freight till he has built up his time. Will some of those making this suggestion try it and see how much they carry? Aerial advertising is however a good way for the beginner to build up his time. However, practically every regulatory act suggested as yet would make this impossible by making it impossible to drop anything from the plane, and by covering the wings with huge registration letters.

Oh! yes! the beginner might try smuggling booze.

The ideal would of course be that beginners should not carry passengers till they have had a hundred or more hours. But if this is adhered to I fear that when all our present day fliers die off there won't be any to fill their places. And if aviation is to grow there must continually be more added to it.

I would note from Wm. G. Schauffler's article (AVIATION, March 8 and 29) that he would suggest that all pilots be trained by the Army Cadet School. Which, of course, is the natural attitude of an Army man. However, if the poor taxpayers could see how the Army squanders money on such training I believe that they would hardly favor increasing Army Air Service Budgets for this purpose.

I don't believe that it will create any argument for me to state that if the money were apportioned out to civilian schools three times as many men could be trained, and trained better, for the same amount.

And to be fair to all civilian schools it could be stipulated that any student flier with a certain number of hours, who could pass certain prescribed tests should be awarded a certain sum of money. (And of course the student lacking other resources could agree to turn this over to the school for training him. Perhaps it would not be necessary that the sum be large enough to cover entire cost of tuition, as many students could pay part of the cost themselves (as is done at State Universities).

ALEXANDER VARNEY

The National Balloon Race

Ward T. Van Orman Wins Litchfield Trophy With Balloon Flight of Over 800 Miles.

WITH IDEAL weather conditions and a stiff wind from the Southwest, nine contestants in the National Elimination Balloon Race took off from the Little Rock airport between 5 and 5 40 o'clock on the afternoon of April 29

The Arkansas Gazette pilot balloon, the Skylark, cast off at 4:25 p.m. and fulfilled the expectations of all the pilots by heading toward the Northeast at a brisk rate The nine balloons contesting for the Litchfield Trophy, presented by Paul W. Litchfield, president of the Goodyear Tire and Rubber Co, Inc, and the right to membership on the American team in the international race for the Gordon Bennett Cup in Belgium, left the field on schedule time to the second Each balloon cleared the airport enclosure at a height of from 400 to 1,000 ft They departed at five-minute intervals and the nine could be seen drifting toward the Northeastern horizon as the largest crowd ever assembled in Little Rock began to break up after the ninth balloon had left the field The Skylark had passed from view before the official entries began to ascend

The United States Army balloon, the S-51, of Phillips Field, Md, manned by Lieut James F Powell and James Early, took the air at exactly 5 o'clock They were followed five minutes later by the Army entry from McCook Field, Dayton, Ohio, the S-19, piloted by Capt Laurence F Stone, with Capt Guy R Oatman as aide

The Goodyear Southern California, with Walter H Hanna, pilot, and Robert P Lehr, aide, left at 5 10 p m The Detroit, with Herbert V Thaden and Charles D Williams, Jr, in the basket, took off at 5 15 p m, and seemed to be leaning slightly further to the North than the preceding balloons It also was flying at a lower altitude, the pilot apparently hoping to maneuver into a stronger wind by gaining distance to the northward before getting into the higher wind currents

Ward T. Van Orman, veteran pilot and winner of the 1924 and 1925 elimination contests, took off in the Goodyear IV at 5 30 p.m., with Walter W Morton as his aide The balloon shot upward rapidly to a height of several hundred feet before clearing the field As it sailed over the landing field the pilot poured a full bag of sand over the side of the basket and the balloon continued to rise at a good rate.

The Scott Field Army entry, the S-23, piloted by Capt Hawthorne C Gray, with Lieut. Douglas Johnston as aide, was in sixth starting position and got away at 5·25 p.m.

Svend A U Rasmussen, Danish pilot, in charge of the "Detroit Aderafter" entered by the Adcraft Club of Detroit (and not, as previously announced, his own entry), with Edward J. Hill as aide, the Army balloon S 20 from Langley Field, Va, in charge of Lieut William A. Gray and Lieut. Roland Kieburtz, and the Akron N A A, representing the Akron Chapter of the National Aeronautic Association, with John A Boettner and Herbert W Maxson in the basket, held the last three starting positions, the ninth balloon getting away at 5:40 p m

The pilots carried provisions for 48 hr and were equipped for sea flying Each basket was lined or covered with rubber fabric. Two of the balloons carried pneumatic pontoons and others had pneumatic boats and life preservers Each balloon was equipped with a radio receiving set, including loud speaker, and the pilots were able to know the location of all crafts by means of a system of broadcasting carried out through radio station KTHS at Hot Springs and a string of other stations throughout the territory covered in the flight

Ward T. Van Orman

The "Goodyear Southern California" landed five miles East of Broadhead, Ky, at 11 00 a m on April 30, and the Army balloon, S-21, was reported to have landed 12 miles North of Hickory, N.C, about 560 miles in an air line from Little Rock Most of the balloons traveled in an easterly and northeasterly direction which carried them over the Allegheny and Blue Ridge Mountains into West Virginia, Virginia and Pennsylvania. The Skylark, which went up thirty minutes ahead of the first of the contestants in the race to feel out air currents, was landed shortly before noon on April 30 by Pilot W C Naylor, at Alfred, Tenn, approximately 400 miles Northeast of Little Rock The Skylark had only 20,000 cu ft gas capacity, while the contesting balloons were 35,000 cu ft in capacity

The race was won by Ward T Van Orman, pilot of the Goodyear IV, which makes it the third time in succession upon which he has won the Litchfield Trophy He flew about 815 miles in the balloon and landed on May 1 on the bank of the James River, South-southeast of Petersburg, Va, to avoid being blown out to sea. The "Akron, N A A", piloted by John A Boettner, was second, with the Army balloon, S-23, piloted by Capt Hawthorne C Gray, third This, presumably, means that, assuming that these three have 80,000 cu. ft balloons at their disposal, they will represent the United States in the International Balloon Race from Belgium for the Gordon Bennett Cup

It must be remembered, however, that the exact routes taken and the official times and landing points have not yet been determined at the time of this going to press, so, it will be necessary to await the official records before any definite conclusions can be drawn

Aero Philatelic Society of America

The collection of stamps seems to be one of the most absorbing and harmless of all hobbies The air mails of various countries have offered a rather fascinating field for stamp collectors as new lines have constantly been started and, in many cases, have not been run very long In many cases, only one flight has been made and the cancelled envelopes and stamps are extremely rare and their value is constantly increasing Catalogues are printed, listing all stamps, identifying their genuineness and giving their value The interest in air mail stamps is such that the Aero Philatelic Society of America was formed some time ago The Society issues a monthly publication, bringing out all of the latest information pertaining to air mails and is also getting together a complete history of this service from its early days The bulletin of the Society is edited by George W Angers, P O Box 412, Springfield, Mass It gives news of special flights on which air mail was carried and on the opening of new lines, besides furnishing a medium of exchange for the stamp collector

New European Air Mail Routes

Air Mail routes have recently been reopened in Europe from London to Hanover and Berlin, serving central and Eastern Germany and (by means of railroad connections from Berlin) the East Baltic countries (except Finland), Russia and beyond, Austria, Czechoslovakia and Poland, also from London to Hamburg, Copenhagen and Malmo, serving North Germany, Denmark, Sweden and Finland, via Stockholm.

Analysis of Civil Flying in the United States

Total Mileage for 1925 is 9,203,165 Miles. Figures Discussed in Detail.

ACTUALLY IT is absolutely impossible to get more than a very rough idea of how much flying is done in the United States by civilian fliers. It is impossible because many of the fliers do not keep a really accurate log of their flying Many attempts have been made to estimate the amount of flying done and it may be that the actual number of miles flown will always remain as an estimate, just as the mileage of automobiles remains as an estimate. The figures compiled by AVIATION are by no means exact but they probably are as near as any figures which can now be obtained or have been obtained in the past.

While our attention has been called to gross exaggeration on the part of many pilots, especially individual fliers, the majority of fliers reported figures which are well within the bounds of probability Many pilots did not receive the questionnaire which AVIATION sent out and less than one half of those who received it sent in an answer It is, therefore, likely that, in some measure, the mileage which was not received would make up for the exaggerations in the mileage printed.

The total mileage so far attained is 9,203,165 miles The total mileage of civilian flying in the whole of Europe for 1924 was 5,927,356 miles. Even allowing for the fact that the omissions in the American mileage figures might not entirely compensate for the exaggerations, it can safely be said that unsubsidized flying in the United States far exceeds the subsidized civilian flying of any European nation and probably of the whole of Europe combined

The figures on the number and types of planes used and the types of engines are even less complete than the mileage figures The figures discussed below are not considered in any way complete and, in certain instances, they are not even proportionally correct. They are printed, herewith, as there probably are no better figures available and, as such, they are interesting

Average of 152 Hr. Per Plane Per Year

The 527 pilots and companies who sent in reports owned a total of 866 planes, which works out to 10,638 miles at 70 m.p.h., average speed Even if no allowance is made for exaggeration in the reports, this works out at less than half an hour per day per plane This fact is of great interest as it is manifestly impossible to make a fair living out of half an hour's flying per day The answer lies in the release of large quantities of cheap war surplus planes. It is possible to operate on very small revenue with this equipment because the interest and depreciation charges on these planes, due to their low first cost, have been extremely low It is fairly obvious, from the figures, that a large number of the pilots reporting must have had outside jobs and that their flying was incidental and done on Saturdays and Sundays or when special occasions arose, such as photographic trips. Furthermore, the addresses of any of the pilots is "care of" some garage, radio concern or other business, which is further enlightening

Preponderance of War Surplus Planes

Three-hundred and ninety-one of the 866 planes reported were either of a miscellaneous variety or no name was given Of the 475 planes, the types of which were reported, 171 were Jennies, 63, Canucks, 98, Standards, 37, Thomas Morse, 45, Waco, 26, Swallow, 11, Travel Air, 10, Laird and 14 were special It is quite obvious that this is not a complete list of the planes of these types which are operated in this country but the figures are interesting as a basis for estimate Regarding engines, 233 OX engines were reported, 32 Curtiss, C6 or K6 and 77 Hissos. No engine names were given on the balance of the reports

Practically all the pilots reported doing passenger carrying and cross country flying Ninety-six did advertising; 117, photographic work, 120, school work, 74, exhibition work, 26 carried express and 12 reported work for the movies The majority of the reports did not state the nature of the work done besides carrying passengers. Fifty-three of those reporting, stated that they flew for their own purposes and not for hire but this did not seem, in all cases, to mean that they were amateur fliers who flew solely for pleasure. On the other hand, the wording of the questionnaire emphasized the commercial end and many of the amateur pilots did not send in reports on this account.

In conclusion, we would like to thank those firms and individuals who co-operated with us in sending us lists of pilots. We would also like to thank those who filled in and returned the question blanks. The realization that there is more commercial flying in the United States than there is in all the rest of the world together will only gradually reach the public The fact, though, is of great importance and should have an effect on the planning of airports, airways and on legislation.

More Statistics

The following are the outstanding mileage statistics to date:

State	*Mileage*	*State Total*
ALABAMA		
The Glenn E Messer Co	35 000	35,000
CALIFORNIA		
B Williams	8,500	
Alvin L Weymouth	8,500	17,000
ILLINOIS		
Fred E Machesney	20,000	
Harvey J Ankamaus	10 000	
Fred W Priestman	12,000	42 000
IOWA		
Harold W Holley	4 200	4,200
OHIO		
Ernest C Hall	5,000	5 000
OREGON		
Leroy L Brown	10,000	
W J Nell	17,000	27,000
PENNSYLVANIA		
W Winslow Neely	3,800	3 800
TEXAS		
R W Bertgis	18 000	
L W Mendell	16,000	
Henry Woods	17,780	
Geo Bischof	5,500	
A D Hatch	3 500	
John Googin	3 500	
Henry Snow	800	
Pierre Chevalier	5,800	
Donald Riddle	275	
Southern Airways Inc	123 000	
Earl B Smith	9 310	
Jasper Lee	14 550	225,085
WASHINGTON		
W Frank Kammer	15 000	15,000
		375 885

The State total mileage statistics are given below:

State	*Mileage Total*
Alabama	100 600
Arkansas	41 580
Arizona	15 400
California	1 122 460
Colorado	98 100
Connecticut	132 000
Washington, D C	25 000
Florida	138 800
Georgia	25 000
Idaho	37 000
Illinois	1 035 020
Indiana	271 010
Iowa	248 151
Kansas	733 360
Kentucky	77 400
Louisiana	27 100
Maine	22 380
Maryland	55 000
Michigan	447 066
Minnesota	257 405
Missouri	260 100
Montana	49 650
Nebraska	80 650
New Jersey	43 200
New Mexico	20 000
New Hampshire	10 300
New York	512 480
North Carolina	182 670
North Dakota	83 041
Ohio	363 860
Oklahoma	572 547
Oregon	66 500
Pennsylvania	821 578
Rhode Island	30 500

State	Mileage Total
South Carolina	70,000
South Dakota	233,840
Tennessee	75,600
Texas	548,785
Utah	21,000
Virginia	78,000
Vermont	5,000
Washington	100,400
West Virginia	35,880
Wisconsin	252,250
Wyoming	84,500
	2,203,185

Corrections

In the statistical record of commercial flying for the year 1925, Victor Dallin of Lansdowne, Pa., was credited with 150,000 miles of flying; actually the figure should have read 14,000.

The Harvard Flying Club

Harvard University is now the possessor of the first active college flying club in the country. Since the first organization meeting of an interested group of Harvard students last November, a stable organization has been created and maintained for the purpose of promoting interests of aviation at America's oldest institution of learning.

Harvard men have always been prominent in aeronautical circles, from a graduate in 1783, who was the first man to cross the English Channel through the air, to Norman Prince, organizer of the Lafayette escadrille which contained on its rolls a large number of the sons of Harvard.

The present flying club at Harvard is not the first organization of its kind among the undergraduates of the University, but, so far, it has been the most successful. Back before the war, a club of enthusiasts was formed which succeeded in purchasing a plane only to crack it up later because of a lack of funds to keep it in good repair, and there have been spasmodic attempts at a revival of the organization since the war, but none of them have been successful.

The cornerstone of the new Harvard organization is financial strength and a system has been evolved whereby the club will have funds enough to purchase and maintain a plane by next fall. The plane will be rented at cost to members of the club, but only licensed pilots, of which there are over 10 out of the club's membership of fifty, will actually be allowed to fly the plane.

The purpose of the club, as set forth in its constitution, is to maintain a plane for the benefit of its members and to foster aeronautical development at Harvard. The club was organized by a group of men who took the naval reserve aviation course at Squantum, Mass., last summer. At present, the membership of the organization is limited to 50 men and, practically from the start, all the vacancies in the membership list were filled. At the last elections, the club took in six men out of a waiting list of 18 and the number of men desiring to get into the organization is increasing so rapidly that the membership limit will undoubtedly have to be increased in the near future.

The officers and members of the club come from all over the country. The present officers of the organization are: R. H. Jackson of White Plains, N. Y., president; W. N. Bump of New Rochelle, N. Y., vice-president; J. R. Fordyce of Little Rock, Ark., secretary and August Pabst of Milwaukee, Wis., treasurer. Pabst and Jackson have been officers of the club since its organization. The executive committee is composed of the officers and Brutus Brooks of Ysleta, Tex., John DeMetz of Pass Christian, Miss., and H. T. Nelson of Evanston, Ill.

The ten "flying members" of the club are Fordyce, DeMetz, Jackson, W. B. Bowers of Searsdale, N. Y., and J. G. Cowling of Milwaukee, Wis., who took the first six weeks of the naval reserve course at Squantum; Pabst and F. W. Perkins of Brookline, Mass., who have taken both the elementary course at Squantum and the advanced course at Hampton Roads under Navy auspices; Lieutenant Carroll of the Army Air Service; Brooks and F. L. Ames, who have received training in civilian schools; and Theodore Hazen, manager of the Aiglon Aviation School at Weston, Mass.

Most of the members of the club are prominent in some form of undergraduate activity. Pabst is a Princeton man now attending the Harvard Law School, Fordyce and Henry Chauncey of Columbus, Ohio, were members of the Harvard Football team last fall, Bump is manager of the Crimson eleven, Holden White of Cleveland, Ohio, plays on the polo team, and Rodney Jackson and Frank Otis of Moline, Ill., are editors of the Crimson, the undergraduate daily paper.

A powerful alumni committee is in the process of formation—to be composed of prominent Harvard men interested in aeronautics. A number of Harvard professors have war records, notably Dr. Magoun, who spent four years in the R. A. F., and it is intended to include all these men in the advisory board of the club if possible. Hearty endorsement of the club has been received from Secretary Davis of the Navy Department and President Godfrey L. Cabot of the N. A. A., both of whom are Harvard graduates.

Activities of the club have so far consisted chiefly in regular luncheons held at the Harvard Union. At these affairs, men of prominence in aviation have been secured to speak, and programs have included such men as Capt. E. V. Rickenbacker, Lieutenant Carroll, Commander Byrd of the MacMillan Arctic Expedition, and Lieutenant Brown, in charge of Boston Airport.

Activities of the club will continue through the remainder of the college year and, in June, a large number of Harvard students will take the Naval course at Squantum, following the preliminary training now being given at M. I. T. under the auspices of Lieutenant Thomas of the Navy and the naval aviation authorities. When these men have completed the Navy course next fall, the Harvard club will number practically half of its membership as competent pilots.

New British Airship Propellers

The first propeller has just been completed for the new 5,000,000 cu. ft. capacity British Government airship, R 101. This ship is being equipped entirely with Leitner-Watts Hollow Steel propellers, the first of which is illustrated herewith. These propellers are believed to be the biggest metal

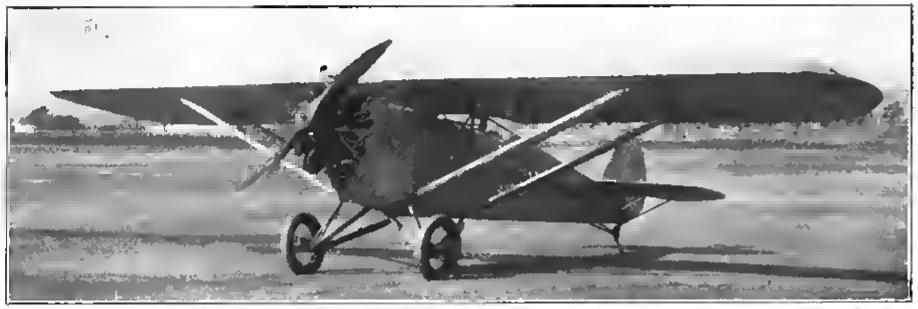
The Leitner-Watts airship propeller

propellers which have ever been constructed, and weigh considerably less than would their equivalent in wood construction. The blades are of the detachable variety, adjustable as to pitch at their hub, and the hubs will have a reversing mechanism so as to enable the propellers to be used for checking the way on the ship when coming up to the mooring mast for anchorage.

The Ryan M–1 Monoplane

Los Angeles-San Diego Passenger Airline Company Produces New Light Commercial Plane.

A NEW AIRPLANE of great interest has recently been produced in the factory of Ryan Airlines, Inc., of San Diego, the operators of the first successful passenger airline running daily between Los Angeles and San Diego. The plane, the Ryan M-1 monoplane, is of more than usual interest since it is the type to be used by Pacific Air Transport, Inc., on the air mail route from Seattle to Los Angeles, for which P A T Inc. are the contractors. Already a number of extended trial flights have been made with the plane, largely in connection with the operation of P.A.T. Inc. The machine was designed by T. C. Ryan, president of Ryan Airlines, Inc.



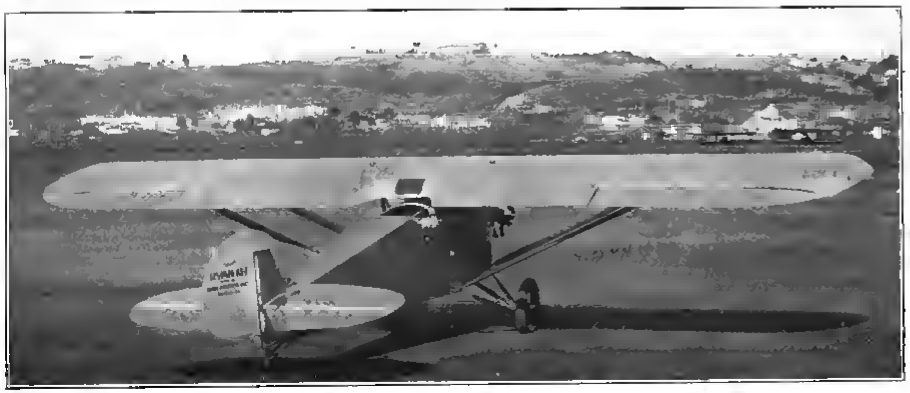
The Ryan M-1 Monoplane with Wright Whirlwind engine (200 hp. air cooled radial)

With T. C. Ryan as pilot and Vern C. Gorst, president and C. M. Comstock, vice-president of Pacific Air Transport, as passengers, the M-1 recently made a 2,600 mile cross country flight from San Diego to Seattle and return, charting the route of the air mail service between Los Angeles and Seattle. Over the entire 2,600 mile course the plane averaged a cruising speed of 114.6 m.p.h.

In designing the Ryan M-1 every endeavor was made to produce a machine adaptable to several purposes, with equal efficiency in performing each. A high factor of safety, plenty of reserve power, and a good performance were features kept closely in mind. Furthermore, economy in operation commercially was a result aimed at. In design and construction, the stipulations and recommendations laid down by the Aeronautical Safety Code have been followed throughout.

With a wing spread of 36 ft. the M-1 is a plane of moderate size. The cleanness of lines and freedom from parasite resistance are noticeable. The wing is mounted above and directly onto the fuselage structure, although the peculiar cockpit arrangement, with the fuselage covering cutaway, gives the general appearance of the existance of center section struts. This arrangement gives the pilot and passenger a very clear view ahead and to each side. Furthermore, this feature renders possible the installation of doors to the cockpits.

The passengers' cockpit, which, when the plane is equipped as a mail plane, serves as the mail compartment, is very roomy. As a passenger plane, seats are provided for two persons with 300 lb. of baggage. As a mail plane, there is cargo space for four or five full-size mail bags, the compartment being 3 ft. wide by 3 ft. 9 in. deep and 4 ft. long.



Another view of the Ryan M-1 (Wright Whirlwind). The exposure of the top fuselage longerons at the position of the rear cockpit can be clearly seen

The fuselage is constructed of welded chrome-molybdenum steel tubing, protected by Lionoil and covered with fabric. No wires are needed for bracing purposes, the Warren truss system being employed. The tail surfaces are also of steel tube construction, and the stabilizer is adjustable from the pilot's seat. The tail skid is constructed of spring leaf steel and is steerable, rendering ground maneuvering greatly facilitated. The under carriage is a normal split axle type constructed of steel tubing with a wide track.

Changing Engines Simplified

The engine mounting and engine are completely removable by taking out four nickle steel bolts. This makes possible the use of several different types of engines by simply changing the mountings, which can be done in about twenty minutes. Thus, airline and air mail operators using the plane need not necessarily keep several planes in reserve for engine overhaul, since extra engines may be mounted and maintained ready for installation at short notice with connections ready for instant attachment. The power plant is a Wright Whirlwind 200 hp. radial air-cooled engine.

The wing is of moderately thick section built in one piece. The spars are of box type with special two-ply mahogany walls with the grain running at 45 degs. The leading edge is reinforced with plywood. The wing is braced with two struts of streamline steel tubing on each side of the fuselage, supporting the wing at points approximately one half the semi-span from the wing tips. The streamline strut section is that of an airfoil.

In actual test, the Ryan M-1 has carried a pay load of 644 lb. off the ground with a run of 390 ft., climbed 2,000 ft. in 2 min. and attained a maximum speed of 135 m.p.h. While the plane was designed for a Whirlwind engine, an OX5 has been fitted and also a Hispano-Suiza of 150 hp. The performance in each case is given in the following tables:

PERFORMANCE OF RYAN M1 WITH WHIRLWIND 200 hp.	
Pay load	600 lb.
Cruising speed	114 m.p.h. at 1550 r.p.m.
High speed	135 m.p.h. at 1800 r.p.m.
Landing speed	45 m.p.h.
Initial rate of climb	1,200 ft. first minute
Climb in 10 min.	9,000 ft.
Climb in 30 min.	14,500 ft.—(service ceiling)
Absolute ceiling	19,000 ft.
Cruising range	500 miles

PERFORMANCE OF RYAN M1 WITH HISPANO SUIZA 150 hp.	
Pay load	400 lb.
Cruising speed	110 m.p.h. at 1500 r.p.m.
High speed	127 m.p.h. at 1650 r.p.m.
Landing speed	45 m.p.h.
Initial rate of climb	1,000 ft. first minute
Climb in 10 min.	7,000 ft.
Service ceiling	15,000 ft.
Cruising range	500 miles

PERFORMANCE OF RYAN M1 WITH OX5 90 hp.	
Pay load	300 lb.
Cruising speed	85 m.p.h. at 1350-1375 r.p.m.
High speed	100 m.p.h. at 1400 r.p.m.
Landing speed	40 m.p.h.
Climb in 10 min.	4,000 ft.
Service ceiling	9,000 ft.
Cruising range	500 miles

A side view of the Ryan M-1 (Wright Whirlwind). The plane is the type to be used by Pacific Air Transport on the Los Angeles-Seattle contract air mail route.

Russian Commercial Air Lines Report Increased Traffic

Russian commercial air lines accomplished 1,138 flights and covered 865,556 km. in 1925. Passenger traffic increased 34 per cent over 1924 and freight traffic 58 per cent, according to the report.

Russian commercial aviation is in the hands of four companies: "Dobrolet", "Deruluft", "Ukrvosdouchpout", and Junkers. The "Dobrolet" company has lines in central Russia and Middle Asia, those in the latter territory being divided as follows: Kaghan (Bouchere)-Khiva-Tachaus, 520 km.; Kaghan-Duchambe, 724 km.; and Puchpee-Alma-Pernu, 246 km. The first two lines are operated throughout the year, with departures three times a week, but the third is irregular in operation. All three combined registered 546 flights during 1925, covering 330,537 km., and transporting 1,626 passengers and 16,452 kilograms of mail and freight. No information is available on the operations in central Russia.

The "Deruluft" company exploits the Moscow-Koenigsberg line (1,080 km.) with Fokker planes equipped with Rolls-Royce 360 hp. engines. Flights are made daily, except Sundays. Although not operated in Winter, the line counted 329 flights in 1925, covering 374,940 km., and transporting 672 passengers and 25,087 kilograms of freight.

The "Ukrvozdouchpout" company (Societe Ukrainienne des Communications Aeriennes) operates the following lines: Moscow-Kharkoff, 670 km., Kharkoff-Odessa, 490 km.; Kharkoff-Kiev, 430 km., and Kharkoff-Rostov, 400 km. On the first two, flights take place daily, on the latter two, once every three days. Total flights in 1925 numbered 293, covering 160,079 km., and transporting 1,006 passengers and 11,145 kilograms of freight.

The Junkers company has thus far effected only irregular flights on the line from Baku to Enseli (292 km.), which is a prolongation of the line Enseli-Teheran, Persia.

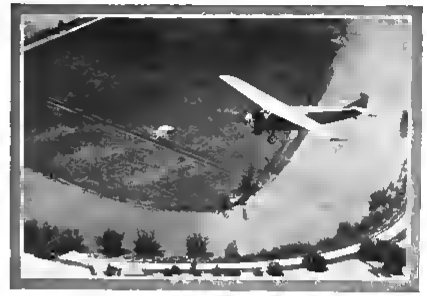
It is stated in Paris that the Union des Republiques Sovietiques Socialistes proposes to create six new air lines in 1926, totaling 12,000 km., and connecting the distant provinces of the west and north with central Russia.

May 10, 1926 AVIATION 715

NATIONAL AIR RACES — 1926

Sanctioned by National Aeronautic Association

Endorsed by Federal Branches and
Aeronautical Chamber of Commerce



PHILADELPHIA

SEPTEMBER — 4th TO 11th, 1926

AN IMPORTANT FEATURE OF THE

SESQUICENTENNIAL INTERNATIONAL EXPOSITION

The Greatest Air Show

We are trying to make this the greatest air show ever held and one which will mark the progress in every branch of aeronautics. In addition to those events which have formed a large part of the program at other national races we will have new races and efficiency contests. It will be possible for you to enter a plane of any type or class. You will have an opportunity to demonstrate your products before vast gatherings of Americans and foreign visitors. Practically all of the $30,000 in cash prizes will be awarded to civilians entering commercial machines.

ENTRANTS FROM ALL COUNTRIES ARE INVITED

Civilian and Commercial

Efficency, endurance and speed tests. Exhibitions. Night flying. Aerial night photography. Navigation. Aerial beacons. Airplane radio. Air transport—mail, express and passenger. Aerial advertising. Balloon flights. Accessory demonstrations. Equipment tests. Flying circus. Stunts and comedy. Parachutes.

Military and Naval

Races and efficiency tests. Air raids. Aerial combat. Aerial defense. Night and day exhibitions. Airships. Balloons. Military and naval aircraft. Anti-aircraft demonstrations.

The Sesqui-Centennial International Exposition
1776 1926
Philadelphia
June 1 to December 1, 1926

THE NATIONAL RACE COMMITTEE

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The Sesqui-Centennial International Exposition
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HOWARD F. WEHRLE, *Managing Director,* **NATIONAL AIR RACES 1926** **819 Atlantic Bldg., Philadelphia, Pa.**

Air Service Aerial Photographic Activities

Army Air Service Photographic Operations Extend over Wide Field. In Addition to Training, Etc., 8000 Sq. Miles Photographed During 1925.

DURING THE year 1925 there has been a great increase in the demands upon the Army Air Service for aerial photographs for military, map-making and other purposes, and a decided increase in the variety of purposes for which photographs are used. In addition to the routine necessities of training, extensive photographic operations for practically all branches of the Army have been accomplished and photographic mosaics and aerial photographs for map-making and various aerial survey purposes have been furnished to cover areas of approximately 8,000 sq. miles. By far the greatest demand for aerial photographs has emanated from Federal agencies outside the War Department, particularly the Geological Survey, whose schedule submitted to the Air Service for the fiscal year 1926 calls for the photographing of areas approximating 40,000 sq. miles. Forty percent of the entire mapping in the United States for 1925 by the latter Department was accomplished by the aid of aerial photographs furnished by the Army Air Service. In the latter part of the year, active participation was begun in the Geological Survey schedule for mapping the entire United States, according to the Temple Bill Act passed by Congress in March 1925.

Temple Bill Activity

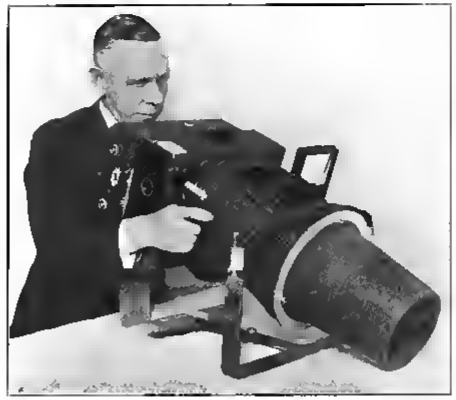
As only about 43% of the country has been covered with topographic maps and many of these maps will have to be revised or the areas resurveyed to provide maps of the present day standard, the Geological Survey estimates that photographs will be required of about 2,000,000 sq. miles of areas within the territorial limits of the United States under the Temple Bill program. It is estimated that between ten and fifteen million dollars will be saved on this project by the use of aerial photography as compared with what it would cost if the work were done by ground survey alone. In addition, there is approximately a 50% saving effected in the time consumed over the old methods, and an improvement in the quality of the maps has resulted. The greatest proportion of economy has come in the work of revising maps. In some instances, nearly the entire work of revision has been accomplished by means of aerial photographs, so that a saving of as much as 75% of the cost of ground methods has been effected. The photographs are being used in standard topographic mapping to prepare plane table field sheets with surface data, such as roads, railroads, streams, woodlands and other features which are ordinarily obtained by ground work. These plane table field sheets are used by topographers who go over the ground to add the contours, names, boundary lines and other information to complete the map.

Special Equipment Developed

The Army Air Service has furnished to the Geological Survey multi-lens photographs during the year of approximately 9,000 sq. miles in various parts of the country. The total area photographed for the War Department and all other Federal Department during 1925, was approximately 22,000 sq. miles. The bulk of the mapping work has been accomplished with the tri-lens camera developed by the cooperative efforts of the Corps of Engineers and the Army Air Service. The four-lens camera, which is an improvement over the tri-lens camera, has been developed and satisfactorily field tested, and a sufficient number of these cameras are being constructed to enable the Air Service to double its capacity for photographing large areas rapidly.

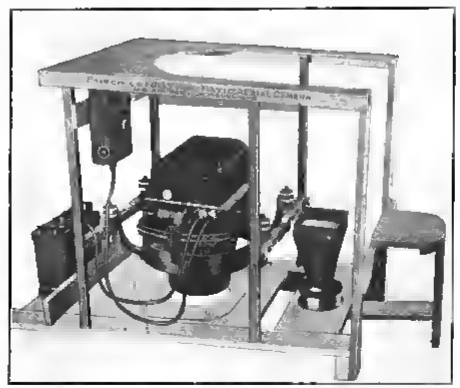
In addition to the mapping activities outlined, the work of making photographic mosaics and aerial views of the water fronts and docking facilities of all the important harbor cities on the Atlantic, Pacific and Gulf Coast, for the Board of Rivers and Harbors, has practically completed. In addition, mosaics were made of reservations and training areas occupied by the General Service School, Infantry, Cavalry, Artillery and Medical Schools, and West Point, for use in their training courses. Mosaics and aerial photographs are also now available of all Army stations, forts and flying fields in the United States and Insular Possessions.

A photographic airplane at work



Fairchild Model K 6 military type aerial camera. This camera uses with one loading 75 ft of film equivalent to 115 exposures 7 x 9-1/8 in in size. The focal length is 50 cm

The Army Air Service now has 15 organizations known as photographic sections in the various Corps Areas throughout the United States, and three in our Insular Possessions. These photographic sections are established at flying fields and have well equipped laboratories for finishing the photographs made by Army Squadrons. Several new developments for military purposes have been successfully carried out by the Air Service Engineering Division at McCook Field. Among the notable features was the first successful aerial photographs made at night by the use of flash-light bombs dropped with parachutes from the photographic plane. Another feature was the method for the rapid developing and finishing of aerial photographs in the airplane while in flight. In experiments carried out during military maneuvers at Fort Leavenworth, Kansas, aerial photographs were made and dropped to transmitting stations, where they were sent by photo-telegraphy to New York and San Francisco, and excellent photographs reproduced in those cities 26 min. after exposure was made in the airplane.



The Fairchild fully automatic military type K 3 aerial camera, showing the manner in which it is usually mounted in an airplane. From left to right are: the storage battery which may be replaced with the wind type 12 volt generator, the Intervalometer, the camera, and the view finder. This camera is of 12 in. focal length and will automatically take pictures at any predetermined interval from 8 to 90 sec. The magazine contains film for 115 exposures, as in the K 6 type. Such functions as automatic timing, film winding, film spacing, winding and tripping of the shutter are taken care of automatically.

A study of the following list of projects completed during 1925, indicates the variety and extent of the photographic work accomplished by the Army Air Service:

9,000 sq. miles of area in New Hampshire, Vermont, New York, Illinois, Missouri and Texas for mapping purposes.

For the Corps of Engineers

Mississippi River from the mouth of the Missouri to the mouth of the Ohio.

A strip of tri-lens photographs covering the course of the Mississippi River for approximately 200 miles.

Tri-lens photographs of Rainy Lake Watershed, covering the boundary lakes between Minnesota and Canada. Area photographed,—approximately 1,200 sq. miles.

Photographs for river surveys covering total areas of approximately 5,000 sq. miles in sections Tennessee, Southern.

Photographs of Ft. Humphreys and Indian Head Quadrangles, Va., approximately 400 sq. miles, for use by the Corps of Engineers in course of instruction on aerial photography and map-making at the Engineer School, Ft. Humphreys.

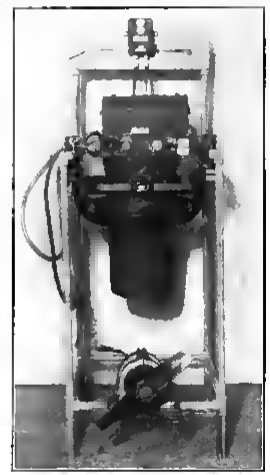
Mosaics and sets of oblique views of the Tennessee River and Wilson Dam, adjacent to Muscle Shoals, Ala.

Mosaic and oblique views of Horseshoe Falls, Niagara, N. Y., for the District Engineer, Buffalo, N. Y., to be used in the study of erosion.

War Department

Photographs of an area approximately 200 sq. miles in the vicinity of Gettysburg, Pa., for General Service School, Ft. Leavenworth. Completed and delivered.

Tri-lens photographs of an area of approximately 1,000 sq. miles of the Reservation at Ft. Riley, Kansas for the Cavalry School.



The Fairchild fully automatic military type K 4 aerial camera. This camera takes pictures automatically at any predetermined interval of time from 8 sec. to 90 sec. The magazine contains film for 115 exposures as in the K 6 type.

Tri-lens photographs of a strip 10 miles wide covering the borders of Texas and Mexico, extending from Rome, Texas, to the mouth of the Rio Grande. This project is for the International Boundary Commission Texas-Mexico.

Photographic mosaics at a scale of 1/15000 of the border areas surrounding the proposed Shenandoah and Great Smoky Mountain National Parks in Virginia and Kentucky,—approximately 1,500 sq. miles.

Photographs of the Nacona Gas Field, Okla., approximately 400 sq. miles, for the U. S. Helium Production Plant, Ft. Worth, Texas, in the study of proposed routes for pipe lines.

Photographs of the border territory, El Paso to Fort Quitman, Tex., covering an area of approximately, 800 sq. miles, which takes in both sides of the Rio Grande, for the Mexican Section of the International Boundary Commission.

Mosaic to the scale of 1/10,000 of an area ten miles wide paralleling Long Island Sound, extending from the Housatanic River to the New York State Line, for establishing the location of a new highway, made for the Bureau of Public Roads.

Photographs of the Hudson River, vicinity of Croton Point, N. Y., for the U. S. Coast Guard in locating submerged objects.

Photographs of Rice Fields, between Lake Charles and Lafayette, La., covering an area of approximately 200 sq. miles, for the Department of Agriculture for use in the study of possibility of crop estimates by aerial photography.

Flying Boat Take-Off Experiments

A report, entitled "Characteristics of a Boat Type Seaplane During Take-Off", by J. W. Crowley, Jr., and K. M. Ronan, has just been issued by the National Advisory Committee for Aeronautics. The report, which relates to the planing and get-off characteristics of the F-5-L flying boat, gives the results of the second of a series of take-off tests on three different seaplanes, conducted by the National Advisory Committee for Aeronautics. The single-float seaplane was the first tested and the twin-float seaplane is to be the third.

The characteristics of the boat type were found to be similar to the single float, the main difference being the increased sluggishness and the relatively larger planing resistance of the larger seaplane. At a water speed of 15 m.p.h., the seaplane trims aft to about 12 deg. and remains in this angular position while plowing. At 22.5 m.p.h., the planing stage is started and the planing angle is immediately lowered to about 10 deg. As the velocity increases, the longitudinal control becomes more effective, but overcontrol will produce instability. At the get-away, the range of angle of attack is 19 deg. to 11 deg., with velocities from the stalling speed through about 25 percent of the speed range.

The report, No. 226, may be obtained from the National Advisory Committee for Aeronautics, Washington, D. C., upon request.

Franco-German Air Accord

German and French airplanes now may fly over French and German territory, respectively, by reason of the Franco-German air convention signed in Paris on April 14.

The agreement abolishes the existing reciprocal ban on aircraft of one country flying over territory of the other nation and thus permits the opening of new direct air lines between London, Paris and Berlin and other German cities, and to Copenhagen and Moscow, by way of Germany.

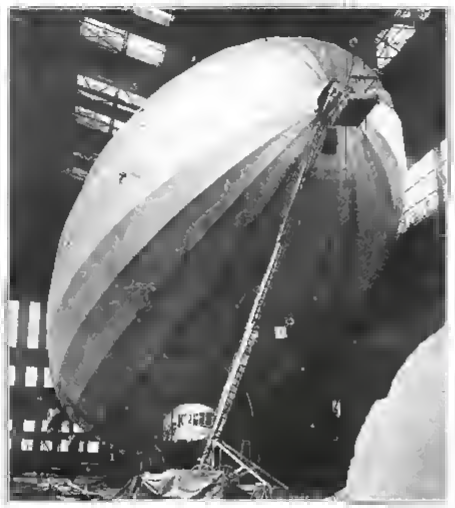
Rapid travel facilities in Europe have been greatly enhanced by the convention. Plans to extend Europe's air lines had been made in anticipation of the signature of the compact and the new lines will begin regular operation in June.

Los Angeles Test Flights Set

The Los Angeles has been carrying out more test flights during the week of May 2 proceeding out to sea from Lakehurst to a distance of some twenty miles to undertake certain test. On board in addition to the regular crew were several technical men from the Bureau of Aeronautics who were in charge of the specific tests.

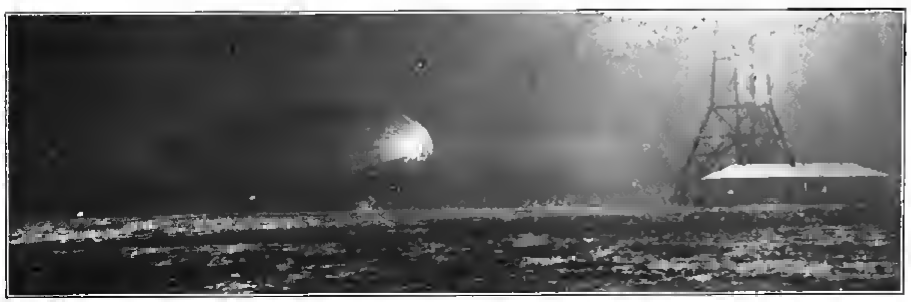
Extensive plans for test flights of the airship have been completed by the Navy Department, and transmitted to the Naval Air Station at Lakehurst, N. J.

From May 31 to July 3, the mooring ship Patoka will be stationed at Newport, R. I., and the Los Angeles will be there at least once a week, returning to Lakehurst after each trip. From July 5 to August 28 the Patoka will be at Bar Harbor, Me., where the Los Angeles will continue her mooring tests.



Extra long ladders are necessary when the Los Angeles undergoes an overhaul. Adjustments are being made to the mooring tackle in the above photograph of the airship in the Lakehurst hangar.

The general work for the summer includes the training of officers and personnel and the handling of the airship on the ground and fueling while at the mast. Special experiments will be made with the new water recovery apparatus and with new navigation instruments.



International Newsreel

The Los Angeles being taken from her hangar at Lakehurst, N. J., at midnight April 26-27, prior to riding at her mooring mast for the remainder of the night and setting out on a 300 mile flight over Atlantic City and Philadelphia the next day.

Consolidated Training Planes

An airplane used extensively by the Navy for training purposes is the Consolidated Training Plane built by the Consolidated Aircraft Company of Buffalo, N. Y. The plane is a two-seater tandem, single bay biplane convertable to either a land machine or a seaplane. The plane is, therefore, adaptable to a variety of purposes.

The makers have equipped machines of this design with the Wright Hispano 180 hp. engine for the Army. The most recent model is powered with the Wright Whirlwind engine, and is used by the Navy for flight and gunnery training.

The Consolidated Aircraft Co. was organized by Maj. Reuben H. Fleet, who is its president, with the purpose of specializing in the manufacture of training planes. Major Fleet was one of the few civilian pilots on the West coast who learned to fly before the War. Before the United States entered the War, he had enrolled to take a course of military flying at San Diego to supplement his previous civilian training. He was stationed at a number of training centers, and was sent abroad to study training conditions. After the War, he was sent to the Engineering Division at Dayton to specialize on training equipment.

The chief engineer, Lieut.-Col. Virginius E. Clark, had also specialized in training planes. Colonel Clark is a graduate of Annapolis, and took a post-graduate course in aerodynamics at M.I.T. He was stationed at training centers part of the time during the War, and then at Dayton. He, later, became chief engineer for the Dayton Wright Company and continued the design of training planes.

The first contract the Consolidated Aircraft Co. obtained was for twenty side by side training planes. Their next contract was for fifty tandem training planes for the Army Air Service. This contract was unusual in that it called for building in units of ten only. Several of each unit of ten were flown for many hours and then the changes thought advisable were incorporated without extra expense to the government in the succeeding units. On the completion of this contract an additional contract for 100 was awarded them by the Army. When the Navy was considering the purchase of training planes last fall, the Consolidated Company built a new model, incorporating the special characteristics desired for naval training. A contract for forty of these planes to be powered with Wright Whirlwind air-cooled engines was awarded them by the Navy.

The three outstanding characteristics of the Consolidated training planes are safety for personnel, rapidity and thoroughness of training and ruggedness of construction to withstand the hard training uses. Actual results have proved the value of these outstanding characteristics. The number and severity of injuries during training has been reduced. The length of time required for training has been reduced 25 per cent and the students trained on these planes have stood high in their tests. The cost of up-keep for the planes is a minimum.

It is interesting to note that all the heads of the Consolidated Company are experienced pilots. Major Fleet is their test pilot. Colonel Clark does considerable flying and Mr. Newman, the factory manager, and the assistant factory manager are also pilots and fly frequently. It is noteworthy to see this company, which was organized specifically for the purpose of building training planes, make such a success in their chosen line.

Oil-Flow Tests Being Conducted

The characteristics of lubricants and lubrication systems with particular reference to the extent to which they are influenced by change in temperature are being studied by the Bureau of Standards of the Commerce Department under authorization from the Bureau of Aeronautics of the Navy Department.

At low temperatures, such as experienced at times by aircraft engines, oil may flow extremely slowly. For such conditions, the dimensions of the pump and feed lines must be sufficient to ensure adequate lubrication and yet provision must be made to prevent over-oiling when temperature conditions are such that the oil flows freely. For the purpose of conducting the experiments, an air-cooled radial engine has been mounted in a "cold room" and provided with the necessary equipment for measuring oil flow under various conditions. Measurements with this engine are being paralleled by an experimental study of the pump and other elements of the lubrication system.

Heavy Oil Engine Development

A two-cylinder aircraft engine which consumes very heavy oil has been developed experimentally by the Navy Department and is likely to be used as a basis for a more powerful engine of the same type for use in airships. This engine, it is believed, will greatly increase the safety of the rigid airship because the heavy oil fuel is not inflammable.

The new engine is the invention of A. P. Attendu who has been interested in the development of a heavy oil engine for a great many years. The engine weighs only three and a half pounds per horsepower and is designed to develop 125 hp.

With the successful completion of tests on the experimental model, the Navy Department is prepared to proceed with the construction of larger engines. It is also believed that such engines may be successfully built for submarines.

A Navy Consolidated Training plane equipped as a seaplane and fitted with a Wright Whirlwind engine (200 hp. air-cooled).

Wright Apache Tests Continue

Following preliminary flight tests of the Wright Apache single-seat shipboard fighter with its new engine, the Wright Simoon air-cooled radial, at Mitchel Field, Long Island, the plane has been taken to the Naval Air Station at Anacostia, D.C., and turned over to the Navy's Trial Board, by whom official performance tests are being conducted.

Land tests were first made and after these had been completed, with very interesting results, the wheels were removed and the floats attached. The sea tests are now being carried out. The results of the official tests are not being made public but it can be said that the characteristics of the Apache are excellent.

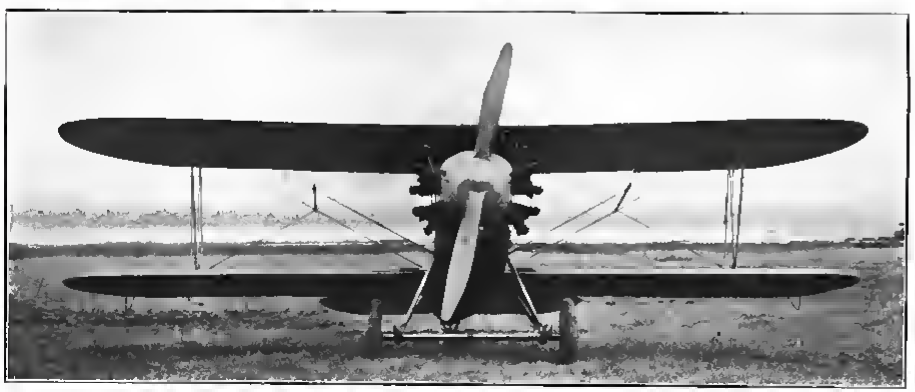
The tests were especially intsresting because of the performance of the new power-plant, the 325-350 hp. Simoon engine. The valve gear of this engine is completely enclosed. The push rods work inside steel tubes which also serve as supports for the forward end of the rocker arm housing. The latter are aluminum castings, serving both to house and to support the rocker arms. They are provided with sheet aluminum covers which protect the rocker and rocker roller bearings from dust and spray and help to maintain the lubrication of these bearings.

Grease is forced into the rocker bearings through an Alemite fitting. In addition to giving complete protection and unusual quietness, this form of rocker support construction gives excellent compensation for the expansion and contraction of the cylinders which result from changes in temperature.

The magnetos are mounted on the crankcase front section where they are readily accessible for adjustment. The carburetor is mounted at the rear of the rear section of the crankcase, and the starter, which may be of any type, is mounted directly above it. The fuel pump, oil pump, and gun control drives are mounted also on the rear section. A low altitude supercharger of the centrifugal type is used, and is driven through gearing from the crankshaft.

The cylinders, which are of the most advanced design, have cast aluminum heads screwed and shrunk on to forged steel barrels with integral machined fins. A large rugged crankshaft is mounted on two large roller bearings. The master connecting rod is similar in design to those used on other recent models of Wright engines. The articulating rods are of "H" section. Ribbed pistons are used, made of a heat-treated aluminum alloy. The bore and stroke are both 5½" giving a piston displacement of 1,176 cu. in.

The size and weight of this engine adapt it essentially for fighting and observation planes designed for use on aircraft carriers and other ships at sea, which planes must of necessity be smaller than fighting and observation planes used on land only. The utility of the engine, however, extends into a great many fields where a radial air-cooled engine larger than the Wright Whirlwind 200 hp. is wanted.



The Wright Apache (Wright Simoon 325-350 hp. air cooled radial engine) single seater shipboard fighter

Congressman Writes on Legislation

To the Editor of AVIATION:

I have been on the subcommittees that considered the Winslow Bill and also the bill now pending in Congress. I believe in the necessity of regulation and certificates of airworthiness. I believe the initial regulation should impose a minimum of interference with the idea that the best practice will develop from experience in regulation.

I regard inspection as an essential part of regulation. I see no great difficulty in the expense of inspection from the standpoint of the government or the owners, provided common sense practices are applied. Regulations will undoubtedly make it the duty of the fliers to procure certificates, but that does not mean that they are to be required to travel to distant locations. Neither should it require the government pay inspectors to follow up machines in remote locations. Regulations must be imposed, having in mind the reasonable convenience of the owner and the government's inspectors.

I take it that, after an inspection service is on an established basis, it may not become necessary to have an official government inspector make a physical inspection of every machine for which a certificate is issued. It is entirely practical that certificates may be issued upon reports of competent mechanics under established rules of examination.

Any department fit to administer regulations will accommodate itself to the reasonable requirements of practical operation. I take it that the difficulties you anticipate would arise on account of an impractical administration of the law rather than the provisions that are proposed in the pending bill.

We meet in conference between the two Houses April 28. We hope to come to agreement within the next few days. I would be glad to receive any suggestions you have as to the provisions of the proposed law.

I understand that after the law is enacted, it is the purpose of the Department to give ample opportunity for interested parties to have their views considered as to the practicability and justice of proposed regulations. In any event, so far as I could be helpful, I would be very glad to take an interest, with a view of getting an efficient practical administration of the law.

I am anxious to secure encouragement of aviation. I hope for the least interference consistent with that purpose.

CLARENCE F. LEA

The Belgian Congo Air Line

The Belgian Congo Air Lines mail traffic has increased from 40 kilograms to over 500 kilograms per month in the first seven months. It is now possible to travel from Brussels to Elisabethville in the Congo in 23 days by Belgian transport—ship, rail, and air.

An Efficient Aircraft Finish

Lionoil, manufactured by Berry Bros. of Detroit, is an anti-rust material produced through treatment at high temperature of a combination of several oils. Its preserving action for all metals is such that a polished iron-plate covered in part with Lionoil and exposed to dampness does not show any alteration in the protected part after being in contact with damp ground or damp air for a long time, whereas, the part not covered with Lionoil becomes entirely rusty. Repeated tests under all forms have given the best results even subject to the action of acids and to that of certain alkaloids.

It is especially in aviation that Lionoil has played an extremely important part. Thanks to this material, duralumin may, at the present time, be efficiently protected against the harmful influences of dampness, of sea water, and even of acids.

The first tests carried out at the Naval Establishment of Saint-Raphael, in France have enabled one to appreciate that non-protected samples of duralumin quickly deteriorated, whereas those protected by the ordinary methods resisted longer, and that those treated with Lionoil were absolutely intact.

Lionoil is applied with great facility, either with a brush or by means of dipping or spraying processes or any other method according to the importance and possibilities of upkeep of the part to be protected. It flows very easily and covers about 600 sq. ft. of smooth and dry surface per gallon. Once applied, it is transparent, extremely durable and gradually becomes harder and harder, and after drying it may receive any paint whatsoever, to which it imparts great durability.

"Lionoil Clear" is adopted today by many of the leading constructors, both for land and sea machines, as the only dope which absolutely protects duralumin and renders both wood and fabric waterproof, with a thickness of 1/100 of a millimeter per coat, its negligible weight having enabled the manufacturers of this material to produce with "Lionoil Clear" paints which, while preserving the Lionoil qualities, would have a great advantage in aviation, which is so jealous of any extra weight, of decreasing to a very large extent the weight of the paints generally used.

Demonstrations carried out with Lionoil paints have given remarkable results; the necessary quantity of Lionoil paint to cover a surface of one square meter equals an extra weight of from 15 to 25 grammes per square meter according to the pigments used.

Lionoil has also solved the important problem of waterproofing wood. Interesting tests in this direction have been effected at the laboratories of the S.T.A., France. Two small samples of ply-wood used in aircraft and consisting of three thickness glued together and stoved, of a weight of 26 gr., were taken for the testing purposes. One of them was doped with Lionoil, of which three coats were applied at intervals of twenty-four hours. When dried, this sample weighed 21.5 gr., i.e. 1.5 gr. of dope. The two samples were then immersed in water for 24 hr. The first one, not treated with Lionoil, weighed 36 gr., i.e. an absorption of 10 gr. of water after having been wiped. The second one treated with Lionoil still weighed 27.5 gr.

An Interesting Air-Cooled Engine Test

The Bristol Aeroplane Co., the manufacturers of the Jupiter air-cooled engine, have been running a kind of endurance reliability test on the engine with the result that the engine has completed the task which it set out to accomplish, namely 25,000 miles. Its actual distance was 25,074 miles—equal to the earth's circumference and a little over, which was accomplished in 225 hr. 54 min. flying time. The engine was sealed, and no replacement of any part has been made except that three sets of sparking plugs were used. The flights were made daily between Croydon and Bristol, England.

The Jupiter is a radial air cooled engine with nine cylinders. It has a gasoline consumption of about 22 gal. per hr. It develops, at normal revolutions, 450 hp. for a weight of 1.60 lb. per hp.

AIRPORTS AND AIRWAYS

Boston, Mass.

By Porter Adams

On April 14, twelve members of the Legislature of the Great and General Court of Massachusetts, made an inspection trip of the Boston Airport at their own request. It was a cold and miserable day but they seemed much interested and inspected everything. The Sikorsky twin-engine plane was there and they perked in it and asked innumerable questions in regard to aviation. They left sometime later, considerably impressed with the splendid location of the Airport and it is hoped that their trip will show real results for good when aviation matters come up to the Legislature. On Friday last, the Sikorsky made a trip down to Portland, Me., piloted by Roscoe Turner and among those present was the famous aviation scribe of the *Boston Transcript*, Dan Rockford. No landing was made at Portland due to the soft condition of the field there but the trip down was made in one hour while the return trip was made in one hour and thirty-five minutes. The plane left the following day for Hartford and to return to New York.

On April 28, the Aeronautical Engineering Society of the Massachusetts Institute of Technology held a smoker at which time Prof. Edward P. Warner, head of the Department of Aeronautical Engineering, spoke on "Summer Opportunities Open to Aviation Students" and Capt. Lyle C. White, flight surgeon of the Boston Airport told the value of rigid examination of pilots. On May 12, the Society will hold its annual banquet.

The bill for the extension of the lease at the Boston Airport has passed the Massachusetts Senate and House and it is expected that it will go to the Governor sometime this week for his signature. It is thought that the passage of this bill will do a great deal for the development of the Boston Airport due to the fact that both the Federal Government and private corporations will be more willing to erect permanent buildings and spend a substantial amount of money with the knowledge that they will be permanently located for a long enough period to enable them to obtain some returns from their investment.

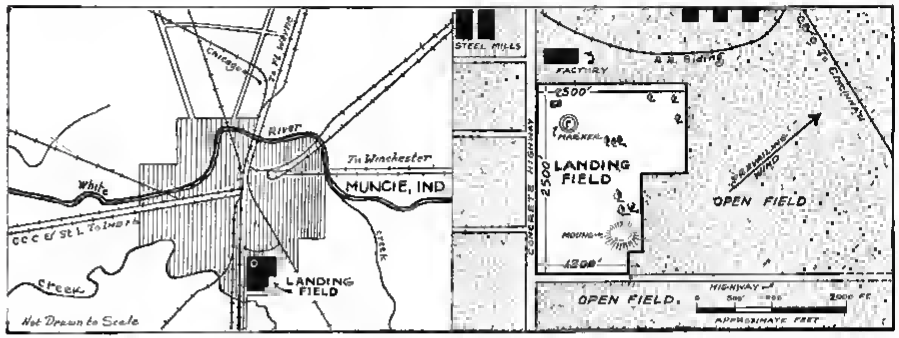
Lieut. R. Curtis Moffet, first Commanding Officer of the Boston Airport, is at present at Walter Reed Hospital in Washington where he is undergoing treatment but it is expected that he will be discharged in the near future and will return to his station at McCook Field, Dayton, Ohio.

Aero Clubs Boost Air Mail

Several of the Western aero clubs, notably the Aero Club of Long Beach, Calif., and the Brea Air Club are conducting an active campaign for the encouragement of the air mail. They are sending out letters by air mail and requesting answers by the same route. The post office cancellation marks on a letter received by AVIATION from the Long Beach Aero Club are extremely interesting. The letter was received at the post office at Long Beach at 9:30 p.m. on April 15, but, being marked "First Flight—Western Air Express", it did not leave Los Angeles until April 17 at 7:35 a.m. The New York cancellation mark is April 18 at 11:30 p.m., but the actual delivery was not made at this office until the morning of April 19. The fact that a letter started from California on one day and reached New York the next is extremely interesting but the total elapsed time between mailing and reception is also significant.

Muncie Airport

As announced in AVIATION a short while ago, the Muncie Aerial Co. of Muncie, Ind., are the distributors for their district of the New Swallow plane. The company has an excellent airdrome at Muncie, covering 120 acres. It is marked with a circle and has the words "Muncie Airport" painted clearly on the roof of a hangar. The Muncie Aerial Co. extends a cordial invitation to all fliers to use the field at any time.



The Muncie Airport. The right hand diagram is of the field itself, while on the left the general surroundings of the field are shown

Denver, Col.

By M J Mclnaney

Colonel Mitchell will give his lecture on aviation at the Auditorium on May 11 Plans are being made by the Air Reserve officers and the Alexander Aircraft Co to give him a real air welcome upon his arrival An escort of uniformed officers will meet him at the station, while ten planes circle overhead He will be the guest of honor at the Reserve Officers luncheon and it is hoped that he will have time to inspect Denver's airplanes and airports

Several organizations are working with the Chamber of Commerce toward the establishment of a municipal airport,—one large enough to take care of National Guard and commercial activities If the present plans are followed out, Denver will have one of the finest fields in the country

Lieutenant Stone left here Sunday, April 25, with a Jenny for the races at Little Rock and J A McInaney, accompanied by Bill Gorman, left April 27 with a new Eaglerock for entry in the exhibits. This new model Eaglerock is a shorter wing job, with OXX 6 engine and has a top speed of 110 m.p.h. The design is the same throughout as other models except that it has a 6 ft. shorter wing spread It is equipped with a Curtiss Reed prop

A celebration is planned for the opening of the Pueblo, Denver and Cheyenne air mail route on May 10 A band, parade, speeches and other inducements will be offered and a large crowd is expected to be on hand to welcome the arrival of the first mail plane

Helena, Mont.

By H. L. Lay

Through the untiring efforts of Capt. Bill Ferguson, secretary of the Helena Commercial Club, Helena will soon have a combination Municipal Golf Course and Flying Field The golf course is so laid out that the players will not have to get on the cinder runways that are to be made as soon as possible, nor will it be necessary to have to drive across the airplane paths to any of the approaches. Most of the fliers feel that this combination will greatly stimulate passenger and photographic work, while others are a little more skeptical. At any rate this idea will be interesting to watch, and should bring Helena more of Montana's visiting pilots.

J B Black, former chief pilot of the Montana Airways, is now building a 26 ft speed boat in which he contemplates using his 180 hp. Woolsley Viper engine. He intends to use it on Lake Hauser, an 18 mile lake about 12 miles from Helena. The writer has just finished designing a cabin job for Mr. Black. It is to be powered with a Hisso or a Whirlwind, and is to be either a 5 or 6 place according to which engine is used We intend to start work on this plane as soon as we have acquired the necessary material

The two light planes being built by the Zenith Aircraft Co. are growing slowly but surely. Larger housing facilities will soon be needed and more daylight, so that they may get these out for their summer flying weather

Jack Lay's high light job with the OX is coming along faster than he contemplated At the present rate, it will be finished for the sunny weather of July

Portland, Ore.

By John G. Langdon

At last we have an aviation field in Portland. The first in five years It is a private commercial field, leased by the Rankin Flying Service and is within two miles of the Portland postoffice The field is 3,000 ft long, North and South, and 600 to 800 ft. wide, East and West It is on the East bank of the Willamette River, about 1¾ miles North of Broadway Bridge The large export flour mill of the Sperry Milling Co. is at the South end of the field Hangars and shops are now under construction and several students are taking flying lessons under the instruction of Tex Rankin

Grover Tyler of the Pacific Air Transport, Inc., was a recent visitor in Portland Mr. Tyler was working out schedules for the new Los Angeles-Seattle air mail route

A great deal of interest is being shown in flying around Portland this Spring and the Aero Club of Oregon is coming to life again and will soon put on a campaign for new members.

Flowers By Air Mail

Postmaster General New has received from florists in Los Angeles, Calif, a box of orchids sent by air mail over the first direct route from Los Angeles to New York City.

The flowers were mailed Saturday morning and reached New York in time for delivery at the Post Office Department in

The Municipal Landing Field at Modesto Cal Runway 2,500 ft long by 500 ft wide

Washington, on the first mail Monday The flowers were in excellent condition.

In making this announcement April 20th, the department made public the following letter

"Celebrating the installation of direct air mail service from Los Angeles to New York City please permit us to extend to you our sincere congratulations We anticipate that this service will be of great help and convenience to us. Please accept the enclosed orchids with our thanks"

Boston-New York Starts July 1.

Mr J. T. Trippe, managing director of the Colonial Air Transport, has announced that the air mail and express service between New York and Boston will start on the first of July

The first flight, he said, will start from Boston at 6 p m., on Thursday, July 1, stop at Hartford at 7 15 and arrive at the airport in Hasbrouck Heights, N. J., at 8 15 Western mail that is carried will be hurried to the transcontinental air mail plane. At 6 30 o'clock on July 2, a mail and express plane will start from New York for Boston

Gold Hunters Carried By Plane to Red Lake

The gold strike in the Red Lake area, Ontario, has resulted in a regular airplane service between Hudson and Red Lake

On account of the snow, the 150 miles between the two towns can be traversed only by dog sleds, specially constructed snow crawlers, and airplanes The demand for improved facilities for transferring passengers and freight has increased to the point where an airplane service can be profitably operated

The service is making considerable headway, despite such handicaps as severe cold, heavy snow, and the absence of well-equipped hangars and fuel supply at Red Lake.

Two planes with skis for runners, are being used, it is impossible to employ planes equipped with wheels or pontoons Each plane accommodates one passenger in addition to the pilot, and has a gross weight capacity of 332 lb

The rate for passengers one way is $100, for freight, $1 per lb. The service has been authorized by the Canadian Government to carry mail Charges, in addition to the regular postage, are 25 cents per letter

United States Air Forces

115th Sqd. Calif. National Guard

By Charles F. McReynolds

The 115th Observation Squadron, 40th Division Air Service, California National Guard holds an enviable position in the aerial development of the West. With Maj. C. C. Moseley as commander, the activities of the squadron are extensive and progressive. Major Moseley, former commander of Clover Field, is vice-president and general manager of the Western Air Express, Inc., which holds the air mail contract for the service between Los Angeles and Salt Lake City. His connection with the air mail service in no way interferes with his activities with the 115th Squadron.

The pilots of the 115th Squadron have completed their first year of flying without a serious crack-up. Four pilots of the squadron are flying the mail for Western Air Express on the Los Angeles Salt Lake City route. They are Capt. "Maury" Graham, Lieut. "Jimmie" James, Lieut. Fred W. Kelly and Lieut. E. L. Ramelin. Maj. C. C. Moseley, Commander of the Squadron is vice president and general manager for Western Air Express. He has a record of 2,500 hr. in the air without a crack-up.

In the first annual inspection of the Squadron, Lieut. Col. F. P. Lahm, Air officer of the Ninth Corps Area, commended the organization for its efficiency and praised the observation section for its excellent work on technical missions.

Major Moseley has announced a new four months training schedule to prepare the squadron for the summer camp during the first two weeks of September. This schedule calls for a complete reorganization of the Squadron and a general speeding up of all departments of instruction.

Plans are now being perfected by which this squadron will cooperate with Fort MacArthur, Los Angeles Harbor defenses, in carrying out aerial observation of coast artillery fire.

It is thought that the 115th Squadron boasts the only Air Photographic Section among the Nation Guard organizations of the country. This section is under Corp. L. C. Anderson, a cameraman in the Charlie Chaplin Studios, and he has done some very fine work in aerial photography.

Lieut. Leslie P. Arnold, world flight pilot, has recently been assigned to this Squadron as Government instructor and has greatly improved the technique of the organization wherever military procedure is concerned.

Alaska Aerial Survey

Lieut. Wallace L. Dillon left Washington on April 28 to join the Navy's Alaskan aerial survey which will leave on May 15 from San Diego, Calif. Lieut. Dillon will be second in command. Lieut. Ben Wyatt is in command.

According to a statement issued by the Navy Department, there will be four Loening amphibian planes and one SDW seaplane used in this survey. Two of these amphibian planes have been delivered at San Diego and will be erected shortly after the first of May. The other two will be delivered at the Naval Air Station, Sand Point, Wash., and will be erected aroound the 20 of May.

The SDW and the two amphibians will be flown to San Francisco, Cresecent City and Seattle, at which place the Sand Point planes will be added to the flight.

The U.S.S. Gannet, of the Minesweeper class, will be tender on the expedition. It is expected by fall that over 40,000 square miles of Alaskan territory will have been surveyed.

No More Guard Units

Secretary of War Davis on April 22 refused to sanction the formation of additional aviation squadrons of the National Guard owing to lack of funds, which he states will enable little progress to be made in the organization of new units within the coming year.

"Under these circumstances," Mr Davis said, "it is thought we should endeavor to complete the organization of those units already begun before attempting to change the plan and organize units not now included therein."

Several States have no unit of the Air Service organized in their National Guard, although having such units allotted for organization These States have, in many cases, requested authority to organize such units and presented data in this connection which the War Department considered worthy of consideration

Naval Aviation Dinner to Admiral Moffett

A get-together stag dinner was given on April 16 by the officers of the Bureau of Aeronautics in the Banquet Room of the Army and Navy Club, in honor of Admiral William A Moffett, Chief of the Bureau of Aeronautics. Covers were laid for forty-one officers and all were on hand Among the speakers of the evening were, Admiral Moffett, Comdr John Rodgers, Capt Emory S Land, Comdr Kenneth Whiting, Comdr N H White, Jr., Comdr H C Richardson, Comdr E E Wilson, Lieut. Comdr R R Paunack, Lieut Comdr M A Mitscher, Lieut Comdr E. W Spencer, Maj E H Brainard, U S M C, Comdr E F Stone, U S C G, Lieut Comdr Davis, Lieut W M Dillon, Lieut. H F Connell, Lieut A I Price, Lieut R A Oftsie, Lieut T P Jeter

Lieut Frank H Conant, 2d, acted as Toastmaster

This is the first of a series of get-together dinners that have been inaugurated by the Bureau of Aeronautics It turned out to be a complete success.

The Admiral, in the closing speech of the evening, stated that the evidences of such close cooperation and good feeling among the officer personnel of the Bureau could not help but promote the efficiency of the organization

Scouting Fleet Aircraft Squadrons Activities

The Aircraft Squadrons of the Scouting Fleet, under the command of Capt H E. Yarnell, left Guantanamo on the morning of April 24 for their return to their base at Hampton Roads, Va This command is composed of the U S S Wright, Flagship, U S S Sandpiper, U S S Teal, with Torpedo and Bombing Plane Squadron 1, Scouting Plane Squadron 1, and a Utility Detachment The first stop was made at Cay Francis, Cuba On April 25, the planes left Cay Francis and all arrived at Miami, Fla, by noon that day.

Two Looning amphibian planes, which have been engaged in the aerial mapping of the Batabano Gulf area on the South coast of Cuba, also departed on April 24 for their home yard at Philadelphia. This detachment is under the command of Lieut C. H. Schildhauer

All planes planned to leave Miami on April 27 for Ferrandina, Fla, and on April 29 the U S S Wright and these planes were scheduled to arrive at Charleston There are thirty-one planes in this group

Admiral W A. Moffett, Chief of the Bureau of Aeronautics with Lieuts A P Snody and A J. Williams, left on April 28 from Washington in an F5L seaplane to meet the Aircraft Squadrons of the Scouting Fleet at Charleston

Army Air Orders

The resignation by Capt. Richard James Kirkpatrick, A S, of his commission, as officer, accepted

First Lieut. Bushrod Hoppin, A S, A S Tech Sch., to report to com. off Chanute Field

Sec Lieut Otto Wienecke, A S, Kelly Field, to Scott Field

Following officers A S placed on detached officers' list, to take effect upon their arrival at Fort Leavenworth: Majs Horace M Hickam, Thomas DeW Milling, Leo C Heffernan, Hugh J Knerr, Byron Q Jones, Fred H Coleman, Edwin B Lyon, Michael F. Davis, Capt George C Kenney

The resignation by Sec. Lieut Robert Edward Rohillard, A S., of his commission as an officer accepted

First Lieut. James E Adams, A S, Pope Field, to Langley Field.

Sec. Lieut Raymond M Barton, A S, Kelly Field, to Fort Sam Houston.

Following officers A. S. relieved from assignment and duty from stations specified, and will proceed to McCook Field, and report to the Commandant, A S Eng Sch, for duty as students: First Lieuts William J. Flood, Scott Field, John P. Richter, Kelly Field, Edmund P. Gaines, Fairfield, Hugh W. Downing, Brooks Field, Kenyon M Hegardt, Brooks Field, Will W. White, Brooks Field, Lloyd E Hunting, Biggs Field.

First Lieut. Howard Z Bogert, A. S, McCook Field, to A S Eng Sch., Dayton.

First Lieut. Eugene C. Batten, A S, relieved from further observation and treatment Walter Reed Hosp., Washington, and upon expiration of sick leave will rejoin station, McCook Field.

First Lieut Emmett A Niblack, A.S (Field Art.), Brooks Field, to Fort Sam Houston.

Following officers A S, assigned to duty at stations indicated, upon completion of tour of foreign service: Capt. Hugh M Elmendorf, Selfridge Field, First Lieuts Joseph L Stromme, Wright Field, Claire L Chennault, Brooks Field, Harold L Clark, Brooks Field, Albert F. Hegenberger, McCook Field, James B. Jordan, Scott Field, Henry W Kunkle, Kelly Field, Glenn C. Salisbury, Kelly Field, Louie C. Mallory, Selfridge Field, Fred C Fishbach, Chanute Field, Adolphus R McConnell, Langley Field.

Following officers A S assigned to duty at stations indicated upon completion of tour of foreign service: First Lieuts. Clarence P Talbot, Fairfield, Charles T. Skow, Fort Riley, Courtney Whitney, Washington, Cornelius E O'Connor, Kelly Field, and Sec. Lieut. Mervin E. Gross, Maxwell Field.

First Lieut Clarence F Horton, A S, Wright Field, to Washington, to report to Com Off, Walter Reed Gen Hosp. for observation and treatment.

First Lieut. Edward E. Hildreth, A S, A S Tech. Sch, to report to Com. Off, Chanute Field

Navy Air Orders

Lieut Sam L. La Hache det. Nav A Sta., Pensacola, to Bu. of Eng

Ens Neil K. Dietrich det. Nav. A Sta, Pensacola, to temp. duty U S S. Chewink.

Gunner Julian H Detyens det. Rec Ship, Puget Sound, to Nav A Sta., San Diego

Ch Bosn George R Groh det. Nav A. Sta., San Diego, to Aircf Squads., Bat Flt.

Lieut. Forrest P Sherman det. N A. Sta, Pensacola, to Nav War College

Comdr. Ben D McGee (SC) det. Aircraft Squads., Sctg. Flt, to Navy Yard, Phila.

Ens. Edward P Creehan det U S S. Milwaukee to Nav. A Sta., Pensacola

Ens. Edward F. Crowe det. U S S Detroit to Nav. A Sta., Pensacola.

Ens Clifford A Fines det U S S Milwaukee, to Nav A Sta, Pensacola.

Ens Sydney King det U S S. Sapelo to Nav A Sta., Pensacola.

Ens. Adolphe H Oswald det U S.S. Trenton to Nav A. Sta., Pensacola

Lieut Thomas E Hipp (SC) det Nav. Aircf Fact., Navy Yard, Phila, to U S S. Mayflower.

Marine Air Orders

First Lieut Rees Skinner det N A S, Pensacola, to M B, N O B, Hampton Roads.

Sec Lieut C J Chappell det N.A.S, Pensacola, to M. B, N O B, Hampton Roads.

Sec. Lieut C. L Marshall det N A S, Pensacola, to M B, Quantico

Sec Lieut P. A. Shiebler det N.A S., Pensacola, to M B, N.O B, Key West

Sec. Lieut L E Jones relieved from duty N A S, Pensacola, and assigned to the M B, N.A S, Pensacola.

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